IRPL-F20

IONOSPHERIC DATA

ISSUED

APRIL, 1946

PREPARED BY INTERSERVICE RADIO PROPAGATION LABORATORY
National Bureau of Standards
Washington, D.C.

IRPL-F20 INTERSERVICE RADIO PROPAGATION LABORATORY
NATIONAL BUREAU OF STANDARDS
WASHINGTON, D.C.
Issued 20 Apr. 1946

Organized under Joint U.S. Communications Board

IONOSPHERIC DATA

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TERMINOLOGY AND SCALING PRACTICES

The symbols and terminology used in this report are those adopted by the International Radio Propagation Conference, and given in detail on pages 24 to 26 of the report IRPL-C61, "Report of International Radio Propagation Conference," and in the Section on "Terminology", in reports IRPL-F1, 2, 3, 4, 5.

Beginning with data reported for September, a new symbol L, defined as follows, is adopted for use in detailed tabulations of hourly values of ionosphere characteristics observed at Washington.

> L or l = critical frequency, muf, or muf factor for F1 layer omitted because no definite and abrupt change in slope of the h'f curve occurs either for the first reflection or for any of the multiples. (See "Report of International Radio Propagation Conference," IRPL-C61, June 1944, VI 3c, p.37).

In the past, ionospheric conditions were summarized on a monthly basis by using average or mean values, for each hour of the day, for each month. However, following the recommendations of the International Radio Propagation Conference, held in Washington 17 April to 5 May 1944, beginning with data for 1 Jan. 1945, median values were used by IRPL wherever possible. Thus, median values are given for Washington, for all stations reporting directly to the IRPL, for the Canadian stations, and for all others sending in detailed tabulations to the IRPL, from which medians can be computed.

Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data existed.

The monthly median values used here are the values equalled or exceeded on half the days of the month at the given hour. The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given in the report referred to above, IRPL-C61.

a. For all ionospheric characteristics:

> Values missing because of A, B, C or F (see terminology referred to above) are omitted from the median count.

b. For critical frequencies and virtual heights:

Values missing because of E are counted as equal to or less than the lower limit of the recorder.

Values missing because of D are counted as equal to or greater than the upper limit of the recorder.

Values missing because of G are counted:

1. For $f^{o}F2$, as equal to or less than $f^{o}F1$.

2. For h'F2, as equal to or greater than the median.

Values missing for any other reason are omitted from the median count.

c. For muf factors (M-factors):

Values missing because of G are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because no Es reflections appeared, the equipment functioning normally otherwise, are counted as equal to or less than the lower limit of the recorder.

Values of fEs missing for any other reason, and values of hEs missing for any reason at all, are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D.C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, no median value is computed, the data being considered insufficient.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, so long as there are at least five values, the median is not considered as doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

It is expected that this practice will be of assistance in evaluating the monthly median Washington data.

MONTHLY AVERAGE AND MEDIAN VALUES OF IONOSPHERIC DATA

The ionospheric data given here in graphical and tabular form were assembled by the Interservice Radio Propagation Laboratory for analysis and correlation, incidental to IRPL predictions of radio propagation conditions. The following are the sources of the data:

Australian Council for Scientific and Industrial Research,
Radio Research Board, Australia:
- Brisbane, Australia
- Canberra, Australia
- Cape York, Australia
- Hobart, Tasmania

British National Physical Laboratory, and Inter-Services Ionosphere Bureau:
- Slough, England
- Great Baddow, England
- Burghead, Scotland
- Capetown, Union of S. Africa
- Colombo, Ceylon
- Oslo, Norway
- Cairo, Egypt
- Falkland Is.

Canadian Radio Wave Propagation Committee:
- Churchill, Canada
- Ottawa, Canada
- St. John's, Newfoundland
- Prince Rupert, Canada
- Clyde, Baffin I.
- Victoria Beach, Canada

New Zealand Radio Research Committee:
- Kermadec Is.
- Christchurch (Canterbury University College Observatory)
- Campbell I.
- Pitcairn I.
- Rarotonga I.

Scientific Research Institute of Terrestrial Magnetism, Moscow, U.S.S.R.:
- Bukhta Tikhaya, U.S.S.R.
- Tomsk, U.S.S.R.
- Sverdlovsk, U.S.S.R.
- Moscow, U.S.S.R.
- Leningrad, U.S.S.R.
- Alma Ata, U.S.S.R.

Carnegie Institution of Washington (Department of Terrestrial Magnetism):
Christmas I.
Fairbanks, Alaska (University of Alaska, College, Alaska)
Maui, Hawaii
Trinidad, Brit. West Indies
Huancayo, Peru
Watheroo, W. Australia
Adak, Alaska

United States Army Signal Corps:
Leyte, Philippine Is.
Guam I.
Tokyo, Japan

National Bureau of Standards:
Washington, D.C.

Stanford University,
San Francisco, California

Louisiana State University:
Baton Rouge, Louisiana

University of Puerto Rico:
San Juan, P.R.

Harvard University:
Boston, Massachusetts

All India Radio (Government of India), New Delhi, India:
Bombay, India
Delhi, India
Madras, India
Peshawar, India

Radio Wave Research Laboratories, Central Broadcasting Administration:
Chungking, China

National Wuhan University:
Loshan, China

The tables of "provisional data" give values as reported to the IRPL by telephone or telegraph. Any errors in these values will be corrected in later issues of the F-series reports. In final data tabulations, any omission of values previously given in provisional tabulations is indicated by a dash.

The tables and graphs of "final data" are correct for the values reported to the IRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of these errors are due to:

a. Differences in scaling records where spread echoes are present.

b. Omission of values where $f^{o}F2$ is less than or equal to $f^{o}F1$, leading to erroneously high values of monthly average or median values.

c. Omission of values where critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series reports, IRPL-F1, 2, 3, 4, and 5. Discrepancies between predicted and observed values are often ascribable to these effects.

IONOSPHERIC DATA FOR EVERY DAY AND HOUR

These data, observed at Washington, D.C., follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given under "Terminology and Scaling Practices" above.

IONOSPHERE DISTURBANCES

Table 102 presents ionosphere character figures for Washington, D.C., during March 1946, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess", together with American magnetic K-figures which are usually covariant with them.

Table 105 gives provisional radio propagation quality figures for North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, February 1946, compared with the IRPL daily radio disturbance warnings, which are primarily for the North Atlantic paths, and ISIB daily warnings, the IRPL semiweekly radio propagation forecasts for the A-zone, and the half-day American geomagnetic K-figures.

The radio propagation quality figures for the North Atlantic were prepared from radio traffic and ionospheric data, reported to the IRPL, in the manner described in detail in report IRPL-R31, "North Atlantic Radio Propagation Disturbances October 1943 through October 1945", issued 1 Feb. 1946.

The radio propagation quality figures for the North Pacific were prepared from radio traffic and ionospheric data, reported to the IRPL, in the manner described in detail in report IRPL-R13, "Ionospheric and Radio Propagation Disturbances, October 1943 through February 1945", issued 24 May 1945.

THE VARIATIONS OF F2-LAYER MAXIMUM USABLE FREQUENCY FACTORS

The value of the maximum usable frequency factor, - the ratio between the maximum usable frequency for any transmission distance and the corresponding critical frequency - depends upon the variation of the virtual height of ionospheric reflection with frequency at vertical incidence. If both the earth's surface and the ionosphere were flat, the maximum usable frequency would be obtained by the simultaneous solution of the two equations

$$(1) \quad h' = h'(f)$$

and

$$(2) \quad f = f'/\sec \phi,$$

for that solution giving a maximum value of f', where Eq. (1) expresses the variation of virtual height h' with the vertical-incidence reflected frequency f, and Eq. (2) gives the relationship between the vertically reflected frequency and the equivalent frequency reflected at oblique incidence, f', in terms of ϕ, the angle of incidence of the transmitted wave upon the ionospheric layer, this last quantity being dependent upon both the distance of transmission and the virtual height of reflection, h'.

Since both the earth's surface and the ionosphere are curved, Eq. (2) is, in actuality, somewhat modified. Values of maximum-usable-frequency factors (M-factors) have been obtained for a number of years at Washington, D.C., using the modification of Eq. (2) derived and presented in "The Relation of Radio Sky-Wave Transmission to Ionosphere Measurements," N. Smith, Proc. I.R.E., 27, 5, 1939, 332. Values of F2-M4000 at Washington, D.C., are available for each hour of the day beginning February 1941.

Early in 1943, comparison was made between transmission curves expressing the modified relationship of Eq. (2) used by the Inter-Services Ionosphere Bureau and by the Interservice Radio Propagation Laboratory. The former had been derived by a combination of theoretical and empirical methods, but were in rather good agreement, throughout the entire range of distances, with those of the Interservice Radio Propagation Laboratory, the principal difference being that of slightly increased values for long transmission distances, as given by the Inter-Services Ionosphere Bureau curves. A compromise between the two types of curves was effected, for further use by both laboratories. At the International Radio Propagation Conference held in Washington, D.C., 17 April to 5 May 1944, transmission curves used in all the principal laboratories for obtaining maximum-usable-frequency factors were compared, and, since the differences among them were but small, standardization was effected by the adoption of a transmission curve which was the mean of all, and very closely resembling that in previous use at the Interservice Radio Propagation Laboratory.

At this conference, standardization was also effected in the method of use of these transmission curves. Up to this time, several laboratories had maintained the practice of applying their transmission curves to the vertical-incidence frequency-virtual height curves represented by Eq. (1), in such a manner that the outside edge of spread echoes on the curve, rather than the true values of f and h', for Eq. (1), determined the solution. This resulted in values given for maximum-usable-frequency factor considerably in excess of true values.

It is evident, from the comparative recency of most of these developments, that but little is known at present concerning the world-wide secular variation of maximum-usable-frequency factors. The longest time series of these factors is that for Washington, D.C. Here it has been found that the values of maximum-usable-frequency factors for the E- and F1-layers are relatively constant with time. Values of maximum-usable-frequency factors for the F2-layer, for any given transmission distance, however, vary in such manner that, for any hour, their twelve-month running average decreases linearly with increased smoothed sunspot number. Thus their variation may be mathematically expressed by

$$(3) \qquad F2\text{-}M = f(t) - S\, f'(t)$$

where F2-M represents the F2-layer maximum-usable-frequency factor for any given transmission distance, f(t) is a function of the time of day, expressing the diurnal variation of F2-M at a sunspot number of 0, S is the smoothed Zurich sunspot number, and f'(t) is another time function representing the diurnal variation of the slopes of the linear trend curves.

It was demonstrated in the report IRPL-R11, "A Nomographic Method for both Prediction and Observation Correlation of Ionosphere Characteristics", that the relationship expressed by Eq. (3) could be conveniently expressed in nomographic form, as a condensed survey of these trends. Fig. 95 presents, in this fashion, the variation of yearly-average values of F2-M4000 at Washington, D.C. Inspection of this nomogram shows that values of F2-M4000 at the hours 0800 and 2000 are relatively invariant with sunspot number, and that the maximum variations, even though they are small, occur near midday and, again, near midnight.

Small convolutions in the central curve of this nomogram are probably of little, if any, significance, since the variations entailed by them are comparable with the precision with which these variations are known. However, the fact that the larger convolutions present a pair of narrow loops, one containing daytime hours, the other containing night hours, and both lying diagonally between the vertical scales, with slight displacement, shows that the variation of F2-M4000 may be approximately expressed as

$$(4) \qquad -(F2\text{-}M4000_{day}) + C_1 = K\, f_1(t)\, (S + C_2)$$

and

$$(5) \quad -(F2\text{-}M4000_{night}) + C_3 = K f_2(t) (S + C_4),$$

C_1, C_2, C_3, C_4 and K being constants.

The seasonal variation is such that the value of F2-M4000 for any month may be obtained by multiplying the yearly-average value by an appropriate constant for the season and hour of day under consideration. Figs. 96, 97, and 98 present, nomographically, the variation of F2-M4000 at Washington, D.C., for the months of June, September, and December, respectively. Inspection of these nomograms shows that the minimum variation of F2-M4000 with sunspot number occurs, for all three months, at 0800 and 2000, although the times of maximum variation do not remain fixed.

Lack of data over a sufficiently long time period from other stations, as mentioned before, prevents exact knowledge of the variations of F2-M4000 with solar cycle on a world-wide scale. However, sufficient data have been accumulated from other places to show that the trend of the variations, at all places, is of the type expressed by Eq. (3), and that the variation is small.

Because of the slight amount of these secular variations, and the relatively greater variations entailed by lack of standardization of scaling practices, and random variations in the observations, a survey of world-wide variation of F2-M4000 was made, using the average value of this quantity reported at any location, for the hour and season under consideration, this average being taken over the entire extent of available data, after deletion of all values where improper scaling procedure (scaling spread echoes, etc.) was considered to effect gross error. Since little, if any, variation was evident between the series of values for northern and southern hemispheres at opposite seasons, or with geomagnetic latitude, values observed at any location were also used, for the opposite season, at reversed latitude, to provide a better estimate of world-wide variation of the quantity, and no separation was made of values pertinent especially to stations in the E, I and W zones used for the IRPL predictions of F2-layer f^o and muf.

Figs. 99 through 104 present charts of the world-wide variation of F2-M4000 for the months of January through June. If values of F2-M4000 are read at reversed latitudes to those under consideration, at opposite season, these charts also serve for the presentation of values for July through December. Small variations exhibited by the contours shown on these charts are probably of low significance. It is generally apparent, however, that there is a tendency for low values of F2-M4000 to be associated with low values of solar zenith angle, and that, in equatorial regions, especially, there is slower change in the values with time in the afternoon than during morning hours.

COMPARISON OF IONOSPHERIC DATA FOR LOSHAN AND CHUNGKING, CHINA FOR JANUARY AND FEBRUARY, 1946

It is fortunate that at the present time there are two ionosphere stations in China about 200 km apart. The first one is located at Chungking, China (29.4°N, 106.3°E) and operated by the Radio Wave Research Laboratories of the Central Broadcasting Administration under the direction of Dr. Fung Chien; the second one is located on the temporary campus of the National Wuhan University at Loshan, China (29.5°N, 103.7°E) and was erected by Dr. Paul C. T. Kwei and Dr. Eugene Hsu, being now operated by U.S. Navy personnel.

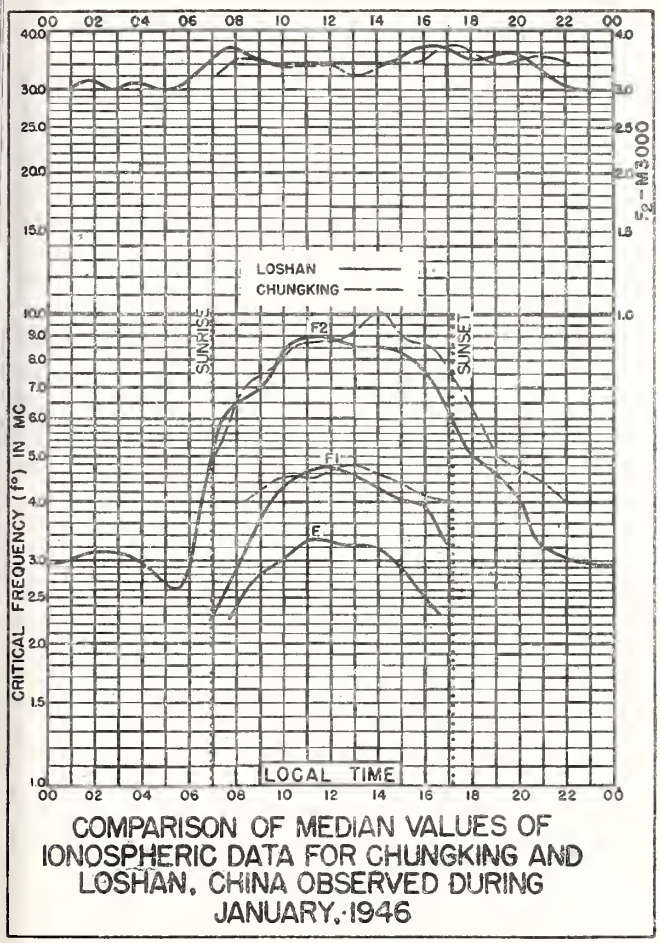
The equipment at Loshan is a manual type of recorder built by the Department of Terrestrial Magnetism, Carnegie Institution of Washington. The Chungking apparatus is also manually operated and the range is from 3.3 to 12.3 Mc, which the operators cover in 15 minutes.

The men in charge of the Loshan station studied at the Department of Terrestrial Magnetism, Carnegie Institution of Washington, and at the Interservice Radio Propagation Laboratory before returning to China with their equipment, so that their scaling techniques may more nearly represent practices in use in the United States than would those of the other group.

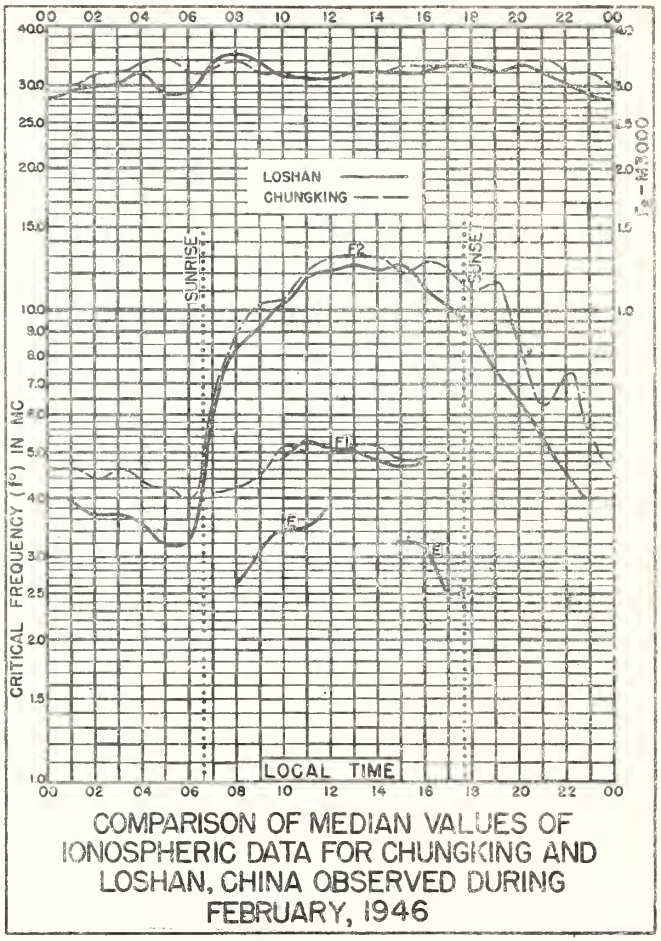
Some deviations from standard practices seem to have occurred however. In February, the Loshan group adopted the practice of not counting median values unless 10 observations were available at a given hour; in January this practice was not observed. In the case of the Chungking group sample records for December 1945 showed excellent progress in development of scaling techniques, although there was some question regarding spread echoes and some $f^{o}F1$ values were scaled incorrectly. Because of lack of information on symbols, the conventional symbols were not used in the data sheets and the blank spaces were thus difficult to interpret.

Median hourly values of $f^{o}F2$, $f^{o}F1$, $f^{o}E$ and F2-M3000 as reported from Loshan for January and February 1946 are shown graphically below, plotted with median values of the same characteristics for Chungking for those months, as calculated from the tabulations at IRPL. The higher values at Chungking in the afternoon and night are probably a result of the fact that many of the missing data were either spread echoes or below the lower limit of the recorder.

It is understood that the Chungking group is making great progress in erecting several more ionosphere stations throughout China. This program would be a great step toward insuring predictions of radio propagation in China which are compatible with predictions for parts of the world where ionosphere work has been going on for many years.



COMPARISON OF MEDIAN VALUES OF IONOSPHERIC DATA FOR CHUNGKING AND LOSHAN, CHINA OBSERVED DURING JANUARY, 1946



COMPARISON OF MEDIAN VALUES OF IONOSPHERIC DATA FOR CHUNGKING AND LOSHAN, CHINA OBSERVED DURING FEBRUARY, 1946

ERRATA

1. Adak, Alaska, should have been listed under Carnegie Institution of Washington (Department of Terrestrial Magnetism) instead of under United States Army Signal Corps as erroneously listed in IRPL-F19, p. 9.

2. The value of $f^{0}F2$ for April 1945, hour 2200, for Canberra, Australia, should have been 4.2 instead of 4.0, as stated in IRPL-F18, Table 63.

Table 1 (Provisional Data)

Clyde, Baffin I. (70.5°N, 68.6°W) March 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.0						3.1
01		4.6						3.1
02		3.5						3.0
03		3.3						3.1
04		3.0						3.1
05		3.3						3.1
06		3.9						3.1
07		4.4						3.1
08		5.1						3.2
09		5.3						3.2
10		5.7						3.3
11		5.5						3.2
12		5.6						3.1
13		5.6						3.3
14		5.7						3.1
15		5.6						3.1
16		5.6						3.2
17		5.6						3.2
18		5.4						3.2
19		5.3						3.1
20		5.4						3.1
21		5.2						3.3
22		4.3						3.1
23		4.7						3.1

Time: 75.0°W.
Length of time sweep: 2.0 Mc to 16.0 Mc in one minute.
Median values.

Table 2 (Provisional Data)

Fairbanks, Alaska (64.9°N, 147.8°W) March 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	330	2.9					4.8	2.7
01	350	3.0					4.3	2.6
02	350	3.4					3.5	2.6
03	350	3.2					3.2	2.6
04	340	3.9					3.6	2.6
05	340	4.0					3.0	2.6
06	310	4.2				1.8	2.3	2.8
07	270	4.9				2.0	3.0	2.9
08	270	5.3				2.4	2.8	2.9
09	250	5.8	220	4.0		2.8	2.7	2.9
10	270	6.3	240	4.2		2.9	2.9	2.8
11	300	6.6	240	4.2		2.9	2.6	2.8
12	260	7.0	240	4.2		2.9	2.8	2.9
13	250	7.4	240	4.2		2.9	2.8	2.9
14	240	7.5		4.0		2.8	2.6	2.9
15	240	7.9				2.8	2.5	2.9
16	250	7.8				2.3	2.2	2.9
17	240	7.5				2.0	1.8	3.0
18	240	7.0				1.4	1.6	3.0
19	250	6.4					1.8	2.9
20	260	4.3					2.7	2.9
21	300	3.8					3.2	2.9
22	310	3.6					3.2	2.8
23	320	3.4					5.0	2.8

Time: 150.0°W.
Length of time sweep: 16.0 Mc to 0.5 Mc in fifteen minutes.
Median values.

Table 3 (Provisional Data)

Churchill, Canada (58.8°N, 94.2°W) March 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.5						2.8
01		4.5						2.8
02		4.4						2.7
03		3.6						2.7
04		3.4						2.8
05		3.4						2.7
06		4.0						2.9
07		4.6						3.0
08		5.8						3.1
09		6.0						3.0
10		6.6						3.0
11		6.8						2.9
12		7.5						2.9
13		8.0						2.8
14		8.5						2.9
15		8.6						2.9
16		8.5						2.9
17		8.4						2.9
18		7.2						3.0
19		6.0						2.9
20		5.8						2.9
21		5.0						2.8
22		4.5						2.8
23		4.3						2.8

Time: 90.0°W.
Length of time sweep: 2.0 Mc to 16.0 Mc in one minute.
Median values.

Table 4 (Provisional Data)

Prince Rupert, Canada (54.3°N, 130.3°W) March 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.6						3.1
01		3.2						3.0
02		3.1						3.0
03		3.0						2.9
04		2.7						2.9
05		2.9						2.8
06		3.2						2.9
07		4.1						3.1
08		5.4						3.3
09		6.2						3.2
10		6.7						3.2
11		7.0						3.3
12		7.7						3.2
13		8.6						3.2
14		9.0						3.3
15		9.3						3.3
16		9.0						3.3
17		9.0						3.4
18		8.6						3.4
19		7.7						3.4
20		6.9						3.4
21		5.7						3.3
22		4.5						3.3
23		3.8						3.2

Time: 120.0°W.
Length of time sweep: Manual operation.
Median values.

Table 5 (Provisional Data)

St. John's, Newfoundland (47.7°N, 52.7°W) March 1946

Time	h'F2	*f°F2	h'F1	f°F1	h'E	f°E	fEs	*F2-M3000
00		5.0						3.1
01		5.1						3.1
02		4.7						3.1
03		4.0						3.2
04		3.7						3.2
05		3.7						3.3
06		3.9						3.2
07		5.4						3.4
08		6.3						3.3
09		8.1						3.3
10		8.4						3.2
11		8.7						3.2
12		9.3						3.2
13		9.6						3.2
14		9.7						3.1
15		9.7						3.2
16		9.3						3.2
17		9.5						3.2
18		9.4						3.2
19		8.8						3.2
20		7.8						3.0
21		6.4						3.0
22		6.1						3.1
23		5.7						3.1

Time: 52.5°W.
Length of time sweep: Manual operation.
Median values.

*Data for 1-19 March, inclusive.

Table 6 (Provisional Data)

Ottawa, Canada (45.5°N, 75.8°W) March 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.1						2.8
01		4.6						2.8
02		4.4						2.8
03		4.1						2.8
04		3.6						3.0
05		3.6						2.9
06		3.8						3.0
07		5.7						3.1
08		6.9						3.1
09		7.9						3.1
10		8.4						3.0
11		8.9						2.9
12		9.3						2.9
13		9.4						2.9
14		9.7						2.9
15		9.5						2.8
16		9.2						2.8
17		9.0						2.9
18		9.0						2.9
19		8.1						2.9
20		7.3						2.8
21		6.6						2.9
22		6.0						2.8
23		5.8						2.8

Time: 75.0°W.
Length of time sweep: 1.95 Mc to 13.5 Mc. Manual operation.
Median values.

Table 7 (Provisional Data)

Boston, Massachusetts (42.4°N, 71.2°W) March 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.0						2.7
01		4.9						2.7
02		4.7						2.7
03		4.2						2.7
04		4.0						2.7
05		3.8						2.8
06		5.5						3.0
07		6.5						3.1
08		7.3						3.0
09		9.4						2.9
10		10.0						3.0
11		10.7						2.9
12		10.8						2.8
13		10.7						2.8
14		10.9						2.9
15		10.0						2.9
16		9.6						2.9
17		9.5						2.9
18		8.9						2.9
19		7.5						2.9
20		6.6						2.9
21		5.9						2.8
22		5.4						2.7
23		5.0						2.7

Time: 75.0°W.
Length of time sweep: 0.85 Mc to 13.75 Mc in one minute.
Median values.

Table 8 (Provisional Data)

San Francisco, California (37.4°N, 122.2°W) March 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.7						2.7
01		4.3						2.7
02		4.2						2.6
03		4.1						2.7
04		4.1						2.6
05		4.0						2.7
06		4.4						2.7
07		7.1						3.1
08		8.7						3.1
09		9.4						3.0
10		10.5						2.9
11		10.8						2.8
12		11.1						2.8
13		10.8						2.8
14		11.0						2.8
15		10.5						2.9
16		10.1						2.8
17		9.6						3.0
18		8.8						3.0
19		7.3						3.0
20		6.1						2.8
21		5.5						2.8
22		5.0						2.8
23		4.9						2.7

Time: 120.0°W.
Length of time sweep: 0.8 Mc to 12.0 Mc in six minutes. Record centered on hour.
Median values.

Table 9 (Provisional Data)

Baton Rouge, Louisiana (30.5°N, 91.2°W) March 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.0						2.8
01		4.8						2.7
02		4.9						2.8
03		4.6						2.9
04		4.4						2.8
05		4.4						2.8
06		4.4						2.9
07		5.6						3.2
08		8.1						3.1
09		9.1						3.0
10		9.4						3.0
11		9.5						3.1
12		9.5						3.1
13		9.6						3.1
14		9.6						3.1
15		9.5						3.2
16		9.5						3.1
17		9.5						3.2
18		9.2						3.2
19		7.4						3.1
20		6.0						3.0
21		5.9						2.9
22		5.5						2.8
23		5.3						2.9

Time: 90.0°W.
Length of time sweep: 1.9 Mc to 9.8 Mc in three minutes, thirty seconds.
Median values.

Table 10 (Provisional Data)

Loshan, China (29.5°N, 103.7°E) March 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEe	F2-M3000
00	260	7.4						2.9
01	240	6.6						3.0
02	240	6.2						3.0
03	230	5.8						3.2
04	230	4.8						3.2
05	240	4.1						3.0
06	260	4.5						3.0
07	230	7.7			110	2.3		3.3
08	230	9.6	220	4.6	110	2.8		3.2
09	240	10.7	220	4.9	100	3.3		3.1
10	260	12.0	220	5.2	100	3.6		3.0
11	270	13.0	220	5.4	100	3.5		2.9
12	280	15.0	220	5.5	100	3.6		3.0
13	290	15.0	220	5.4	100	3.8		3.0
14	280	14.6	220	5.2	100	3.6		3.1
15	270	14.5	220	5.1	110	3.5		3.1
16	270	14.0	230	5.3	110	3.3		3.1
17	240	13.7	220	4.6	110	2.7		3.1
18	230	13.5			110	2.1		3.1
19	230	13.0						3.1
20	220	12.0						3.0
21	220	9.7						3.0
22	240	8.4						3.0
23	250	7.9						3.0

Time: 105.0°E.
Length of time sweep: Manual operation.
Median values.

Table 11 (Provisional Data)

Huancayo, Peru (12.0°S, 75.3°W) March 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		9.0						3.0
01		8.1						3.0
02		7.2						3.0
03		6.3						2.9
04		5.2						3.1
05		4.4						3.0
06		5.4						3.0
07		9.3						3.1
08		9.0						2.8
09		12.0						2.6
10		12.2						2.4
11		11.2						2.3
12		11.0						2.4
13		11.3						2.3
14		11.8						2.2
15		11.9						2.3
16		11.6						2.3
17		11.6						2.3
18		11.4						2.2
19		10.1						2.1
20		9.6						2.4
21		9.7						2.6
22		9.8						2.7
23		9.2						2.9

Time: 75.0°W.
Length of time sweep: 16.0 Mc to 0.5 Mc in fifteen minutes.
Median values.

Table 12 (Provisional Data)

Clyde, Baffin I. (70.5°N, 68.6°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.8						3.3
01		3.7						3.3
02		3.4						3.3
03		3.2						3.5
04		3.3						3.3
05		3.4						3.2
06		3.5						3.3
07		3.5						3.2
08		4.3						3.4
09		5.2						3.4
10		5.4						3.5
11		5.4						3.5
12		5.7						3.4
13		5.2						3.2
14		5.4						3.4
15		5.2						3.4
16		5.3						3.4
17		5.2						3.4
18		5.2						3.3
19		4.8						3.4
20		4.2						3.3
21		3.8						3.5
22		3.5						3.2
23		3.6						3.3

Time: 75.0°W.
Length of time sweep: 2.0 Mc to 16.0 Mc in one minute.
Median values.

Table 13 (Provisional Data)

Burghead, Scotland (57.7°N, 3.5°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.5						
01		3.6						
02		3.5						
03		3.5						
04		3.3						
05		3.3						
06		3.3						
07		3.8						
08		5.2						
09		6.1						
10		7.1						
11		7.2						
12		7.5						
13		7.6						
14		7.6						
15		7.5						
16		7.2						
17		7.1						
18		6.5						
19		5.4						
20		4.4						
21		4.4						
22		3.8						
23		3.5						

Time: 0.0°.
Length of time sweep: 1.0 Mc to 13.0 Mc. Manual operation.
Average values.

Table 14 (Provisional Data)

Adak, Alaska (51.9°N, 176.6°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	350	3.2						2.7
01	310	3.4						
02	320	3.4						2.8
03		3.2						2.6
04		3.2						
05	300	3.2						2.8
06	300	3.2						2.8
07	240	4.7						3.2
08	220	6.0						3.3
09	220	7.3				3.3		3.4
10	230	8.3						3.0
11	240	9.0	210	3.7		3.0		3.3
12	230	8.7	210	2.8		3.1		3.3
13	230	9.1				3.1		3.4
14	230	8.6				2.9		3.3
15	230	8.1				2.7		3.4
16	230	7.2				2.5		3.4
17	220	6.4					3.4	3.2
18	220	4.9					2.2	3.4
19	220	4.3						3.4
20	240	3.6						3.0
21	260	3.2						3.0
22	290	3.2						2.6
23	290	3.2						2.8

Time: 180.0°W.
Length of time sweep: Manual operation.
Median values.

Table 15 (Provisional Data)

Cairo, Egypt (30.0°N, 31.2°E) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.4						2.8
01		4.2						2.8
02		4.2						2.9
03		4.3						3.1
04		3.8						3.3
05		3.0						3.1
06		3.1						3.0
07		6.5						3.4
08		8.6						3.5
09		9.6						3.3
10		10.4						3.2
11		11.0						3.2
12		11.2						3.1
13		11.3						3.2
14		11.1						3.2
15		10.8						3.2
16		10.2						3.3
17		9.5						3.4
18		7.8						3.4
19		6.2						3.1
20		6.1						3.1
21		5.4						3.0
22		4.8						2.9
23		4.5						2.8

Time: 30.0°E.
Average values.

Table 16 (Provisional Data)

Loshan, China (29.5°N, 103.7°E) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	380							2.8
01	280	4.0						2.9
02	260	3.7						3.0
03	270	3.7						3.0
04	250	3.6						3.2
05	250	3.2						2.9
06	270	3.2						2.9
07	230	5.9						3.3
08	230	8.2			110	2.6		3.5
09	230	9.1			110	3.0		3.4
10	260	10.3	220	4.8	110	3.4		3.2
11	270	11.9	220	5.3	110	3.4		3.1
12	270	12.1	220	5.1	110	3.8		3.1
13	270	12.5	230	5.1	110			3.2
14	270	12.2	230	4.8	110			3.2
15	270	12.7	220	4.7	110	3.2		3.2
16	250	11.4	230	4.8	110	3.2		3.2
17	230	10.5			110	2.5		3.3
18	220	9.2						3.3
19	220	7.7						3.2
20	220	6.8						3.3
21	220	5.5						3.2
22	230	4.7						3.1
23	260	4.0						2.9

Time: 105.0°E.
Median values.

Table 17 (Provisional Data)

Cape York, Australia (11.0°S, 142.4°E) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		9.3						3.1
01		8.4						3.2
02		7.6						3.2
03		6.8						3.0
04		5.9						3.0
05		4.8						3.1
06		5.2						3.1
07		6.8						3.3
08		8.1						3.1
09		8.9						2.9
10		9.7						2.8
11		10.8						2.8
12								
13								
14								
15								
16								2.9
17		11.1						3.0
18		10.5						2.9
19		10.0						2.8
20		10.0						2.8
21		9.9						2.8
22		9.4						2.8
23		9.3						2.9

Time: Local.
Length of time sweep: 1.0 Mc to 13.0 Mc in one minute, fifty-five seconds.
Median values.

Table 18 (Provisional Data)

Brisbane, Australia (27.5°S, 153.0°E) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		6.9						3.0
01		6.6						3.0
02		6.2						3.0
03		5.5						3.0
04		4.9						3.0
05		4.7						3.1
06		5.4						3.4
07		6.4						3.4
08		7.1						3.2
09		7.8						3.0
10		8.8						3.0
11		9.0						2.9
12		9.7						3.0
13		9.5						3.0
14		9.2						3.0
15		9.2						3.0
16		9.1						3.0
17		8.8						3.1
18		8.5						3.1
19		8.0						3.0
20		7.4						2.8
21		7.2						2.8
22		7.1						2.8
23		7.2						2.9

Time: Local
Length of time sweep: 2.2 Mc to 12.5 Mc in two minutes, thirty seconds.
Median values.

Table 19 (Provisional Data)

Watheroo, W. Australia (30.3°S, 115.9°E) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.8						2.8
01		5.3						2.9
02		4.8						2.8
03		4.3						2.8
04		3.8						2.8
05		3.7						2.8
06		4.8						3.0
07		5.8						3.1
08		6.6						3.0
09		7.3						3.0
10		8.0						3.0
11		8.3						2.9
12		8.7						2.9
13		8.8						2.8
14		9.0						2.9
15		8.8						2.9
16		8.4						3.0
17		8.1						3.0
18		7.7						3.1
19		7.4						3.0
20		6.9						2.9
21		6.4						2.8
22		6.2						2.7
23		6.0						2.8

Time: Local.
Length of time sweep: 16.0 Mc to 0.5 Mc in fifteen minutes.
Median values.

Table 20 (Provisional Data)

Canberra, Australia (35.3°S, 149.0°E) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.7						2.9
01		5.7						3.0
02		5.0						3.0
03		4.5						2.9
04		4.0						2.8
05		3.8						2.9
06		4.6						3.0
07		5.5						3.0
08		6.1						3.0
09		6.7						2.9
10		7.7						2.9
11		7.6						3.0
12		7.9						2.9
13		7.9						3.0
14		7.6						2.9
15		7.6						2.9
16		7.6						2.9
17		7.0						3.0
18		7.0						3.0
19		7.0						3.0
20		6.6						3.0
21		6.0						2.9
22		5.7						2.9
23		5.8						2.9

Time: Local.
Length of time sweep: 1.6 Mc to 12.5 Mc in two minutes.
Median values.

Hobart, Tasmania (42.8°S, 147.4°E) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.4						2.9
01		4.9						2.8
02		4.4						2.9
03		3.7						3.0
04		3.4						3.0
05		3.6						3.1
06		4.6						3.2
07		5.2						3.2
08		5.6						3.2
09		6.0						3.0
10		6.0						2.9
11		6.4						2.9
12		6.6						3.0
13		6.8						2.9
14		6.9						2.9
15		7.0						2.9
16		6.8						3.0
17		7.1						3.0
18		7.4						3.0
19		7.6						3.0
20		7.0						3.0
21		6.4						2.9
22		6.0						2.8
23		5.6						2.8

Time: Local.
Length of time sweep: 1.0 Mc to 13.0 Mc in one minute, fifty-five seconds.
Median values.

Table 23 (Provisional Data)

Loshan, China (29.5°N, 103.7°E) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	2.9			100			3.0
01	280	3.0	250		100			3.0
02	280	3.1	260		110			3.1
03	260	3.1	270		110			3.0
04	230	3.0	270		110			3.1
05	270	2.7	260		100			3.0
06	270	2.7	260		100			3.1
07	250	4.6	240	2.4	110	2.4		3.4
08	230	6.3	200	2.7	120	2.3		3.7
09	230	6.9	210	3.5	110	2.8		3.5
10	260	8.3	210	4.3	110	3.0		3.4
11	260	8.7	210	4.6	110	3.3		3.4
12	260	9.0	210	4.7	110	3.3		3.4
13	260	8.6	210	4.6	110	3.2		3.4
14	260	8.6	220	4.4	110	3.2		3.4
15	250	8.4	210	4.1	110	3.0		3.4
16	230	7.9	220	4.0	110	2.6		3.7
17	220	6.5	200	3.3	110	2.3		3.7
18	220	5.1	210		100			3.5
19	230	4.8	220		100			3.5
20	230	4.3	240		100			3.6
21	250	3.3	230		100			3.4
22	250	3.1	220		100			3.1
23	280	3.0	250		100			3.0

Time: 105.0°E.
Length of time sweep: Manual operation.
Median values.

Cairo, Egypt (30.0°N, 31.2°E) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.3						2.9
01		3.4						3.0
02		3.4						3.2
03		3.4						3.3
04		3.1						3.3
05		2.4						3.2
06		2.7						3.2
07		5.1						3.5
08		7.0						3.8
09		7.4						3.6
10		7.9						3.8
11		8.0						3.5
12		8.0						3.2
13		7.9						3.4
14		7.7						3.4
15		7.6						3.4
16		7.2						3.6
17		6.3						3.5
18		5.7						3.4
19		4.4						3.3
20		4.4						3.3
21		3.7						3.1
22		3.4						3.0
23		3.3						3.2

Time: 30.0°E.
Average values.

Table 24 (Provisional Data)

Rarotonga Island (21.4°S, 159.6°W) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		8.2						
01		7.2						
02		5.9						
03		5.6						
04		5.8						
05		5.0						
06		5.2						
07		6.5						
08		7.5						
09		8.5						
10		10.0						
11		10.7						
12		11.0						
13		11.9						
14		13.1						
15		12.7						
16		11.0						
17		9.0						
18		8.1						
19		7.4						
20		7.9						
21		8.2						
22		8.2						
23		8.2						

Time: 157.5°W.
Length of time sweep: 2.0 Mc to 16.0 Mc. Manual operation.
Median values.

Table 25 (Provisional Data)

Kermadec Islands (29.2°S, 177.9°W) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	275	7.4						2.8
01								
02								
03	295	5.5						2.8
04								
05	275	4.6						2.9
06	270	5.6	255	3.2	120	2.0		3.1
07	285	6.6	250	4.0	120	2.6		3.1
08	300	7.1	235	4.4	120	3.0		3.0
09	325	7.5	225	4.6	115	3.4		2.9
10	325	7.9	225	4.8	115	3.4		3.0
11	330	8.1	220	4.8	115	3.5		2.8
12	350	7.7	225	4.9	115	3.6		2.8
13	350	7.8	220	4.8	115	3.6		2.8
14	340	8.4	225	4.7	115	3.5		2.9
15	320	8.2	240	4.6	115	3.4		2.9
16	320	7.8	250	4.4	120	3.2		3.0
17	305	7.7	250	4.0	120	2.8		3.0
18	290	7.4	255	3.4	120	2.1		2.9
19	275	7.4						2.8
20	280	7.4						2.7
21	300	7.2						2.6
22								
23								

Time: 180.0°E.
Length of time sweep: 1.8 Mc to 12.0 Mc. Manual operation.
Median values.

Table 26 (Provisional Data)

Hobart, Tasmania (42.8°S, 147.4°E) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.9						3.0
01		4.3						3.0
02		3.5						3.2
03		3.2						3.2
04		2.8						3.2
05		3.5						3.4
06		4.3						3.4
07		5.1						3.3
08		5.2						3.2
09		5.5						3.1
10		5.6						3.1
11		6.0						3.0
12		6.0						3.0
13		6.0						3.0
14		6.0						3.0
15		6.2						3.1
16		6.1						3.1
17		6.0						3.1
18		6.0						3.1
19		6.2						3.2
20		6.1						3.1
21		5.8						3.0
22		5.4						3.0
23		5.2						3.0

Time: Local.
Length of time sweep: 1.0 Mc to 13.0 Mc in one minute, fifty-five seconds.
Median values.

Table 27 (Provisional Data)

Christchurch, N. Z. (43.5°S, 172.6°E) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	3.8					3.9	
01	260	5.1					5.1	
02	250	4.4					4.1	
03	260	3.9					3.8	
04	260	3.5					3.0	
05	260	3.9				1.3	3.7	
06	270	5.0	240	3.8		2.3	5.7	
07	290	5.4	240	4.2		2.8	5.1	
08	330	6.0	220	4.5		3.1	5.6	
09	300	6.5	220	4.6		3.3	6.3	
10	340	6.6	210	4.8		3.4	6.0	
11	330	6.5	220	4.8		3.5	6.5	
12	350	6.5	220	4.8		3.6	6.0	
13	350	6.5	220	4.8		3.6	6.2	
14	340	6.5	220	4.8		3.5	6.4	
15	340	6.5	240	4.8		3.4	7.1	
16	320	6.9	230	4.5		3.2	6.8	
17	300	6.9	220	4.2		2.9	6.3	
18	280	6.8	240	3.8		2.5	5.0	
19	260	6.7		3.0		1.8	4.9	
20	250	6.3					4.3	
21	260	6.6					3.6	
22	270	6.4					3.8	
23	280	6.1					3.6	

Time: 172.5°E.
Length of time sweep: 1.0 Mc to 13.0 Mc. Automatic.
Median values.

Table 28 (Provisional Data)

Falkland Is. (51.7°S, 58.0°W) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		7.0						2.9
01		6.9						
02		6.6						2.8
03		6.6						
04		6.5						2.8
05		7.0						
06		7.0						2.9
07		7.4						
08		7.5						2.9
09		7.7						
10		8.0						3.0
11		8.0						
12		7.9						3.1
13		7.1						
14		6.5						3.1
15		6.4						
16		6.6						3.2
17		6.9						
18		7.1						3.1
19		7.1						
20		7.2						3.0
21		7.4						
22		7.7						2.7
23		7.2						

Time: 60.0°W.
Average values.

Table 29 (Provisional Data)

Bukhta Tikhaya, U.S.S.R. (80.3°N, 52.7°E) December 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.5						
01								
02								
03								
04								
05								
06								
07								
08								
09		4.5						
10								
11		3.9						
12								
13		5.1						
14								
15								
16								
17								
18		5.0						
19								
20								
21		4.8						
22								
23		5.3						

Time: 60.0°E.
Average values.

Table 30 (Provisional Data)

Leningrad, U.S.S.R. (59.7°N, 30.5°E) December 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.6						
01		3.7						
02		3.7						
03		3.8						
04		4.4						
05		4.8						
06		5.1						
07		5.5						
08		5.9						
09		6.3						
10		6.4						
11		6.1						
12		5.7						
13		6.2						
14		6.2						
15		5.8						
16		5.6						
17		6.2						
18		4.9						
19		4.5						
20		4.1						
21		3.6						
22		3.6						
23		3.8						

Time: 30.0°E.
Average values.

Table 31 (Provisional Data)

Tomsk, U.S.S.R. (56.5°N, 84.9°E) December 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		2.7						
01		2.7						
02		2.8						
03		2.7						
04		2.6						
05		2.5						
06		2.3						
07		3.0						
08		5.4						
09		6.7						
10		7.4						
11		7.4						
12		7.6						
13		7.3						
14		6.8						
15		5.8						
16		4.9						
17		3.5						
18		2.8						
19		2.4						
20		2.3						
21		2.4						
22		2.5						
23		2.6						

Time: 90.0°E.
Average values.

Table 32 (Provisional Data)

Falkland Is. (51.7°S, 58.0°W) December 1945

Time	h'F2	*f°F2	h'F1	f°F1	h'E	f°E	fEs	*F2-M3000
00		8.1						2.7
01		7.8						
02		7.3						2.9
03		7.4						
04		7.2						2.9
05		7.3						
06		7.6						2.7
07		7.8						
08		9.0						2.8
09		9.5						
10		9.3						2.8
11		9.7						
12		9.3						2.9
13		8.7						
14		8.3						3.0
15		7.7						
16		7.5						3.1
17		7.6						
18		7.6						3.1
19		7.9						
20		7.8						3.0
21		8.1						
22		8.0						2.8
23		7.8						

Time: 60.0°W.
Average values.
*Data for 1-31 December, inclusive. Table 23 in F19 included data for 1-13 December only.

Table 33 (Provisional Data)

Tomsk, U.S.S.R. (56.5°N, 84.9°E) October 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.0						
01		4.6						
02		6.0						
03		6.8						
04		7.7						
05		8.0						
06		8.2						
07		8.4						
08		8.4						
09		8.2						
10		7.9						
11		7.2						
12		6.7						
13		5.6						
14		5.1						
15		4.2						
16		3.6						
17		3.3						
18		3.2						
19		3.1						
20		3.0						
21		3.0						
22		2.9						
23		2.9						

Time: 0.0°.
Average values.

Table 34

Washington, D.C. (39.0°N, 77.5°W) March 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	5.1						2.9
01	280	4.9						2.8
02	270	4.5						2.9
03	260	4.4						2.9
04	260	3.8					2.3	2.8
05	270	3.6					2.3	(2.9)
06	270	3.8			130	(1.6)	2.5	(3.0)
07	240	6.0	240		110	2.1	3.0	3.2
08	250	7.2	230		110	2.7	3.0	3.2
09	250	8.2	220	4.4	110	(3.1)	3.6	3.2
10	260	8.8	210	4.8	110	(3.4)	3.6	3.1
11	280	9.4	210	4.9	110	3.6		3.0
12	280	9.7	210	5.0	110	3.6		3.0
13	280	9.7	220	5.0	110	3.6		3.0
14	290	9.9	220	4.8	110	(3.5)		3.0
15	270	9.8	220	4.7	110	(3.3)		3.0
16	260	9.7	230	4.4	110	(3.0)		3.0
17	245	9.4	240		110	2.5		3.0
18	240	8.9			130	1.8		(3.1)
19	230	7.9						3.0
20	240	6.9						(3.0)
21	240	6.2						3.0
22	260	5.8						2.9
23	270	5.5						2.8

Time: 75.0°W.
Length of time sweep: 0.75 Mc to 11.5 Mc in 3.4 minutes supplemented by 0.8 Mc to 14.0 Mc in two minutes.
Median values.

Table 35

Fairbanks, Alaska (64.9°N, 147.8°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	2.6					4.6	2.8
01	350	2.5					4.6	2.7
02	350	2.5					3.7	2.7
03	370	2.8					3.7	2.6
04	(340)	2.7					4.3	2.7
05	340	2.7					3.2	2.7
06	332	2.7					3.0	2.7
07	305	3.2					3.0	2.8
08	275	4.2				2.0	2.9	3.0
09	260	5.3				2.2	2.6	3.1
10	258	6.3	235	3.5		2.4		3.0
11	250	7.0				2.6		3.0
12	250	7.4				2.6		3.0
13	250	7.2				2.5		3.0
14	250	7.8				2.4		3.0
15	250	7.6				2.2		3.0
16	240	7.0				2.0		3.1
17	240	5.9						3.1
18	240	4.7					3.0	3.0
19	250	3.5					3.0	3.1
20	270	2.8					3.0	3.0
21	280	2.7					3.0	2.8
22	295	2.2					3.5	2.9
23	308	2.3					3.4	2.9

Time: 150.0°W.
Length of time sweep: 16.0 Mc to 0.5 Mc in fifteen minutes.
Median values.

Table 36

(Corrections and additions to previously published provisional data)

Churchill, Canada (58.8°N, 94.2°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290						5.4	
01	295						5.6	
02	285						3.8	(2.9)
03	300						3.8	
04	335						3.4	(2.8)
05	330	3.2					3.6	(3.0)
06	315						3.9	(2.8)
07	290						3.8	
08	280						3.8	
09	270		240		120	3.5	3.3	
10	270		250	3.7	130	3.0	2.8	
11	270		240	4.0	120	3.1		
12	280		230	4.1	120	3.1		
13	270		225	4.0	125	3.0		
14	270		230	4.0	120	3.0		
15	275		230	3.8	130	3.0		
16	260		240	3.4	140	2.7	3.5	
17	255						2.8	
18	280						3.0	
19	280						3.4	
20	270						3.8	
21	285						4.0	
22	295						5.2	
23	290						4.6	

Time: 90.0°W.
Length of time sweep: 2.0 Mc to 16.0 Mc in one minute.
Median values.

Table 37

(Corrections and additions to previously published provisional data)

Prince Rupert, Canada (54.3°N, 130.3°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240							
01	(240)	2.6						
02	(275)	2.4						
03	(270)							
04	(270)							
05	(260)							3.0
06	(260)							
07	250							
08	220					1.8		
09	200		195		92	2.1		
10	200		180	3.8	90	2.4		3.6
11	220	7.0	180	4.0	90	2.7		
12	220		180	4.2	90	2.9		
13	220		180	4.1	90	2.9		
14	220	8.6	180	4.1	90	2.9		
15	200		180	4.1	90	2.7		
16	200	8.6	190	3.5	90	2.5		
17	190				100	2.0		
18	180	7.2						
19	180							
20	190							
21	200							
22	220							
23	220							

Time: 120.0°W.
Length of time sweep: Manual operation.
Median values.

Table 38

(Corrections and additions to previously published provisional data)

St. John's, Newfoundland (47.7°N, 52.7°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	285	3.4						
01	280							
02	280							
03	280							
04	270							
05	270	3.0					1.6	
06	270	2.6					2.0	
07	270							
08	250		215	2.4	120	2.0		3.4
09	240		220	3.2	120	2.3		
10	250	8.2	220	3.6	120	2.5		
11	260		220	3.8	110	2.7		
12	260		220	4.1	110	3.0		
13	260	9.2	220	4.0	110	2.8		
14	270		220	3.7	110	2.4		
15	260		220	3.3	120	2.4		
16	260		230	3.0	115	2.2		
17	250	8.6	230	2.7	120	2.0		
18	260		230	2.5				
19	245		230	2.3				
20	240							
21	260							
22	270	4.6						
23	270							

Time: 52.5°W.
Length of time sweep: Manual operation.
Median values.

Table 39

(Corrections and additions to previously published provisional data)

Ottawa, Canada (45.5°N, 75.8°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250							
01	260	3.6						
02	260							
03	280							
04								
05								
06		2.6						
07	235							
08	210							
09	210				120	2.5		
10	210	8.0		4.1	110	2.9	3.4	3.2
11	220		200	4.0	110	3.1	4.2	
12	220	9.4	200	4.2	110	3.2		
13	225		190	4.3	110	3.2		
14	220	9.4	200	4.1	110	3.1		
15	210		200	3.9	110	2.9		
16	210	9.2			115	2.6		
17	220							
18	210							
19	215							
20	220							
21	230							
22	240							
23	250	4.0						

Time: 75.0°W.
Length of time sweep: 1.93 Mc to 13.5 Mc. Manual operation.
Median values.

Table 40

San Francisco, California (37.4°N, 122.2°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	3.6					2.5	2.8
01	270	3.6					2.7	2.8
02	270	3.4						2.8
03	270	3.3					2.4	2.8
04	270	3.3					2.5	2.8
05	280	3.3					2.4	2.8
06	270	3.3					2.6	2.7
07	250	4.8				1.8	2.5	3.0
08	240	6.9			120	2.5		3.2
09	250	8.0	220	4.0	120	2.9		3.1
10	260	9.0	220	4.5	110	3.2		3.0
11	260	10.0	220	4.6	110	3.5		3.0
12	270	10.4	220	4.7	110	3.6		2.9
13	260	10.3	220	4.6	110	3.5		2.9
14	260	10.1	220	4.5	110	3.4		3.0
15	250	9.6	230	4.2	110	3.2		3.0
16	240	9.2	240	3.8	110	2.8		3.1
17	230	8.6			120	2.3	2.9	3.1
18	220	7.2					2.6	3.1
19	220	5.1					2.5	3.1
20	230	4.0					2.3	3.0
21	240	3.4						3.0
22	270	3.2						2.8
23	270	3.4					2.4	2.8

Time: 120.0°W.
Length of time sweep: 0.8 Mc to 12.0 Mc in six minutes. Record centered on hour.
Median values.

Tables 41

Baton Rouge, Louisiana (30.5°N, 91.2°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	3.5						3.0
01	300	3.7						2.9
02	300	3.7						3.0
03	300	3.6						3.0
04	300	3.2						3.0
05	305	3.2						2.9
06	330	3.4						2.9
07	285	6.0						3.1
08	275	8.0	260	3.6	130	2.4		3.2
09	270	8.5	250	4.1	120	2.9		3.1
10	290	9.2	250	4.4	120	3.2		3.0
11	300	9.5	250	4.5	120	3.2		3.0
12	300	9.5	250	4.6	120	3.3		3.0
13	300	9.6	250	4.6	120	3.3		3.1
14	300	9.6	250	4.6	120	3.2		3.0
15	290	9.6	250	4.2	120	3.1		3.0
16	285	9.6	250	3.7	120	2.8		3.0
17	270	9.4			130	2.2		3.1
18	250	8.0						3.2
19	250	5.8						3.1
20	260	4.7						3.0
21	280	3.9						3.9
22	300	3.6						2.9
23	300	3.5						2.9

Time: 90.0°W.
Length of time sweep: 1.9 Mc to 9.8 Mc in three minutes, thirty seconds.
Median values.

Tables 42

(Corrections and additions to previously published provisional data)

Maui, Hawaii (20.8°N, 156.5°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.7						
01								
02		3.8						
03		3.3						
04		2.2						3.1
05		2.2						(3.0)
06		2.3						(3.1)
07								
08		7.8						
09	255							
10								
11			235	(5.0)				
12								
13								
14								
15		12.8						
16		11.6					---	2.9
17								
18	245							
19		7.2						
20								
21								
22								
23	255							

Time: 150.0°W.
Length of time sweep: 2.2 Mc to 16.0 Mc in one minute.
Median values.

Table 43

San Juan, Puerto Rico (18.4°N, 66.1°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.2						2.7
01		4.4						2.8
02		4.4						3.0
03		4.2						3.1
04		3.8						2.9
05		3.4						2.8
06		3.4						2.7
07	280	5.4						3.0
08	250	8.4						3.2
09	270	9.3	220	3.9		3.0		3.0
10	300	10.0	220	4.4		3.2		3.1
11	290	10.6	220	4.6		3.3		3.1
12	300	10.2	210	4.8		3.4		3.0
13	300	10.1	210	4.8		3.5		2.9
14	300	9.8	220	4.6		3.4		2.8
15	310	10.0	220	4.6		3.3		2.8
16	300	9.8	220	4.0		3.1		2.9
17	290	9.4						3.0
18	240	9.4						3.1
19		8.5						3.1
20		6.5						3.2
21		5.1						2.9
22		4.9						2.8
23		4.9						2.8

Time: 60.0°W.
Length of time sweep: Record centered on hour.
Median values.

Table 44

(Corrections and additions to previously published provisional data)

Trinidad, Brit. West Indies (10.6°N, 61.2°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00							---	
01							---	
02							---	
03							---	
04							---	
05	275						1.7	
06							1.8	
07					120		2.3	
08			235		120			
09		10.3			120			
10					120			
11		11.2			120			
12		11.1			120			
13					120			
14					120			
15					120			
16			235		120		4.4	
17			235		120			
18		10.3					3.3	
19							2.5	
20		7.9					2.4	
21		6.4					---	
22	260						1.6	
23							---	

Time: 60.0°W.
Length of time sweep: Manual operation.
Median values.

Table 45

Christmas Island (1.9°N, 157.3°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	9.6					2.9	3.2
01	235	8.0					2.3	3.2
02	240	7.0					2.2	3.2
03	245	6.5					2.1	3.2
04	240	5.6					2.1	3.2
05	240	5.1					2.1	3.2
06	240	4.5					2.6	3.2
07	270	6.5					2.7	3.0
08	240	8.8			110	2.9	5.6	2.9
09	240	9.9					7.0	2.6
10	290	9.8	220	5.0			7.7	2.4
11	300	9.5	210	5.1			8.0	2.4
12	320	9.8	210	5.1			8.0	2.4
13	315	10.0	200	5.1			7.7	2.4
14	310	10.6	210	5.1			7.0	2.4
15	280	11.0	215	4.8	110	3.6	6.4	2.5
16	220	11.5			110	3.4	4.8	2.6
17	240	11.6			120	3.1	4.0	2.8
18	250	11.7			105	2.6	4.9	2.8
19	280	11.8					3.4	2.7
20	300	11.4					2.1	2.6
21	280	11.2					2.6	2.6
22	265	10.7					3.0	2.8
23	245	10.4					3.2	3.0

Time: 150.0°W.
Length of time sweep: 1.5 Mc to 13.0 Mc in one minute, thirty seconds.
Median values.

Table 46

Huancayo, Peru (12.0°S, 75.3°W) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	9.4						(3.0)
01	250	7.1						(3.2)
02	240	5.9						3.2
03	240	4.9						3.3
04	240	4.4						3.3
05	240	3.1						3.3
06	260	5.5				1.7	2.9	3.1
07	240	8.6				2.6	3.2	3.2
08	230	10.2				3.3	6.5	3.0
09	300	11.2	220	5.1		3.6	11.9	2.7
10	310	11.2	210	5.1		4.0	11.9	2.4
11	320	11.0	210	5.2		4.1	11.9	2.4
12	330	10.0	200	5.2		4.1	11.9	2.4
13	320	10.6	200	5.1		4.0	11.9	2.4
14	310	11.4	210	5.0		4.0	11.9	2.4
15	245	12.0	205	4.8		3.7	9.6	2.4
16	225	12.2				3.4	9.4	2.4
17	240	11.9				2.7	8.4	2.4
18	275	11.8				1.9	2.9	2.4
19	320	11.6				0.9		2.4
20	375	10.7						2.4
21	345	10.0						(2.5)
22	315	9.7						(2.5)
23	295	10.5						(2.6)

Time: 75.0°W.
Length of time sweep: 16.0 Mc to 0.5 Mc in fifteen minutes.
Median values.

Table 47

Christchurch, N.Z. (43.5°S, 172.6°E) February 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	265	6.1					2.8	
01	260	5.8					2.8	
02	250	5.4					3.2	
03	260	4.8					3.0	
04	260	4.3					2.7	
05	270	3.9					2.9	
06	250	4.8				2.2	2.9	
07	275	5.8	250	4.2		2.8	3.5	
08	300	6.1	230	4.5		3.0	3.7	
09	320	6.6	235	4.8		3.3	5.4	
10	330	6.8	230	5.0		3.5	5.0	
11	325	7.3	220	5.1		3.7	4.2	
12	330	7.3	210	5.2		3.7	5.2	
13	330	7.4	220	5.2		3.8	4.0	
14	330	7.5	220	5.0		3.6		
15	320	7.2	230	4.9		3.6		
16	300	7.5	230	4.6		3.3		
17	290	7.5	230	4.3		2.9		
18	265	7.4	250	3.8		2.4		
19	260	7.9				1.7	3.2	
20	260	8.0					3.2	
21	260	7.3					3.1	
22	275	6.6					2.8	
23	290	6.5					3.0	

Time: 172.5°E.
Length of time sweep: 1.0 Mc to 13.0 Mc. Automatic.
Median values.

Table 48

Oslo, Norway (59.9°N, 11.0°E) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.2						
01		2.3						
02		2.5						
03		2.4						
04		2.0						
05		1.9				1.7	3.2	
06		2.1						
07		2.0				1.8	2.4	
08		3.0						
09		4.5				1.5	3.1	
10		5.8				1.7	3.7	
11		6.4				2.0	3.9	
12		6.7				1.8	3.8	
13		6.8				2.0	3.9	
14		6.4				2.0	3.3	
15		6.0				1.6	3.6	
16		5.4				1.6	2.1	
17		4.6				1.6	2.1	
18		3.6				1.6		
19		2.5						
20		2.4						
21		2.2						
22		2.2						
23		2.3						

Time: 15.0°E.
Length of time sweep: 16.0 Mc to 1.63 Mc in ten minutes.
Median values.

Table 49

(Corrections and additions to previously published provisional data)

Great Baddow, England (51.7°N, 0.5°E) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								3.2
01		2.8					0.8-	3.2
02		2.8					0.8	3.2
03							0.8	3.3
04		2.4					0.9	3.3
05		2.2					0.7	3.4
06							0.8	3.4
07								3.5
08						1.6	1.8	4.0
09						2.0	2.2	4.0
10		6.6				2.3	2.5	4.0
11						2.5	2.6	4.0
12		7.1				2.6	2.5	3.8
13		6.9				2.5	2.6	3.7
14						2.4	2.6	3.7
15		6.6				2.1	2.2	3.8
16						1.6	2.2	3.8
17		4.6						3.6
18		3.9						3.5
19		3.0						3.5
20							1.6	3.3
21		2.7						3.2
22		2.7						3.2
23								3.2

Time: 0.0°.
Length of time sweep: Manual operation.
Median values.

Table 50

(Corrections and additions to previously published provisional data)

Chungking, China (29.4°N, 106.3°E) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06	310							
07	260	5.0	260					
08	240		240	3.9				
09	240	7.4	220	4.3				
10	240	8.4	200	4.5				
11	245	8.6	220	4.5				
12	240	8.8	230	4.7				
13	280	9.1	230	4.7				3.2
14	255	10.0	230	4.5				3.4
15	230	8.8	220	4.3				3.4
16	225		220	4.1				
17	220	7.4	220	4.0				3.7
18	210	6.2						
19	230	5.0						3.4
20	240	4.7						
21	240							
22	280	4.0						3.4
23								

Time: 105.0°E.
Length of time sweep: 3.3 Mc to 12.3 Mc in fifteen minutes. Manual operation.
Median values.

Table 51

(Corrections and additions to previously published provisional data)

Christmas I. (1.9°N, 157.3°W) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.9						3.2
01								
02								3.2
03								
04								
05	252							
06								3.1
07								3.1
08		7.2			110		4.4	
09	260		220				6.6	
10	325		210	4.6				2.5
11	358							2.4
12	370		210	4.9				
13	370						9.6	
14								
15		8.9			110			2.5
16	318				110			
17					105	2.8		
18					140		3.8	2.9
19		9.6						
20							2.7	2.8
21	270							2.7
22								2.8
23	245	6.5					3.5	

Time: 150.0°W.
Length of time sweep: 1.5 Mc to 13.0 Mc in one minute, thirty seconds.
Median values.

Table 52

(Corrections and additions to previously published provisional data)

Capetown, Union of S. Africa (33.9°S, 18.7°E) January 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.9						
01		3.8						
02		3.7						
03								
04		3.4						
05								
06		5.2		3.6				
07				4.2				
08				4.5				
09		7.4		4.6				
10		7.7		4.6				
11		8.0		4.7				
12		8.0		4.7				
13		8.1		4.7				
14		8.0		4.6				2.8
15				4.5				
16		6.8		4.3				2.9
17		6.7		3.9				
18		6.3						
19								2.9
20		5.7						
21		5.0						
22		4.3						
23								

Time: 15.0°E.
Length of time sweep: 2.2 Mc to 16.0 Mc in one minute.
Median values.

Table 53

Sverdlovsk, U.S.S.R. (56.7°N, 61.1°E) December 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00		2.7						
01		2.8						
02		2.8						
03		2.8						
04		2.7						
05		2.6						
06		2.3						
07		2.4						
08		4.0						
09		6.4						
10		7.2						
11		7.6						
12		7.3						
13		7.3						
14		7.1						
15		5.7						
16		5.4						
17		4.3						
18		3.3						
19		2.8						
20		2.4						
21		2.3						
22		2.4						
23		2.6						

Time: 60.0°E.
Length of time sweep: 1.5 Mc to 14.0 Mc in five to thirteen minutes. Manual operation.
Median values.

Table 54

Tomsk, U.S.S.R. (56.4°N, 84.9°E) December 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	300	2.6						
01	300	2.7						
02	290	2.7						
03	290	2.8						
04	290	2.7						
05	290	2.6						
06	280	2.5						
07	270	2.3						
08	250	3.0						
09	230	5.4						
10	230	6.7						
11	240	7.4						
12	240	7.4						
13	250	7.6						
14	230	7.3						
15	230	6.8						
16	220	5.8						
17	220	4.9						
18	230	3.5						
19	250	2.8						
20	260	2.4						
21	280	2.3						
22	290	2.4						
23	300	2.5						

Time: 90.0°E.
Length of time sweep: 1.2 Mc to 10.0 Mc in five to ten minutes. Manual operation.
Average values.

Table 55

(Corrections and additions to previously published provisional data)

Chungking, China (29.4°N, 106.8°E) December 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	340	4.1						
01								
02								
03								
04								
05								
06	280	---						3.0
07	260	6.2	260					
08	250	8.2	230	3.9				3.4
09	230	9.2	220	4.2				
10	240	9.0	200	4.4				
11	240	9.0	200	4.5				3.4
12	260	9.8	200	4.7				3.1
13	260	12.5	200	4.8				
14	240	11.5	200	4.5				3.4
15	220		205	4.4				
16	200	8.8	195	4.2				3.6
17	200	7.8	200					
18	200	6.1						
19	220	5.2						
20	240	5.1						3.1
21	260	4.5						
22	270							3.1
23	300	4.2						3.1

Time: 105.0°E.
Length of time sweep: 3.3 Mc to 12.3 Mc in fiftsen minutes. Manual operation.
Median values.

Table 56

(Corrections and additions to previously published provisional data)

Watheroo, W. Australia (30.3°S, 115.9°E) December 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	270	6.2					5.4	
01	250	5.8					4.8	
02	235	5.2					3.9	3.1
03	240	4.7					3.4	
04	260	4.0					3.2	3.0
05	250	4.2				1.4	3.2	3.1
06	240	5.3				2.1	3.2	3.2
07	290	6.0	225	4.0		2.7	4.5	3.1
08	332	7.5	225	4.6		3.1	4.7	3.0
09	340	7.1	220	4.6		3.3	5.4	
10	340	7.2	210	4.7		3.4	5.0	2.9
11	335	7.6	200	4.8		3.5	5.4	
12	340		200	4.9		3.6	5.6	2.9
13	330	8.3	220	4.8		3.6	5.0	2.8
14	325	8.4	220	4.8		3.5	4.5	
15	320	8.2	220	4.6		3.4	4.7	
16	310	7.8	228	4.5		3.1	4.5	3.0
17	300	7.8	230	4.1		2.7	4.0	
18	240	7.6				2.2	3.5	
19	245	7.4					3.0	
20	250	7.1					3.3	
21	260	6.7					3.8	
22	270	6.4					3.6	
23	280						4.2	2.7

Time: 120.0°E.
Length of time sweep: 16.0 Mc to 0.5 Mc in fifteen minutes.
Median values.

Table 57

Bukhta Tikhaya, U.S.S.R. (80.3°N, 52.7°E) November 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	5.9						
01	250	5.8						
02								
03								
04								
05								
06								
07								
08								
09								
10	260	5.0						
11								
12	250	5.1						
13								
14	260	5.5						
15								
16								
17								
18								
19	250	5.8						
20								
21								
22	230	6.3						
23								

Time: 60.0°E.
Length of time sweep: 1.5 Mc to 9.5 Mc in five to ten minutes. Manual operation.
Average values.

Table 58

Leningrad, U.S.S.R. (WETKAS Ionosphere Station) (60.0°N, 30.3°E) November 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	340	3.1						
01	350	3.0						
02	350	3.1						
03	340	3.4						
04	330	2.9						
05	310	2.9						
06	290	2.9						
07	270	3.6						
08	250	4.5		2.9	130	1.7		
09	240	6.4		4.2	120	2.0		
10	240	7.3		4.9	120	2.1		
11	240	7.6		5.0	120	2.4		
12	250	7.8		5.1	120	2.3		
13	240	7.9		5.2	120	2.2		
14	240	7.5		5.0	120	2.2		
15	240	6.8		4.5	110	2.0		
16	230	5.9		3.4	120	1.8		
17	230	5.5						
18	240	4.9						
19	240	4.4						
20	230	3.5						
21	320	3.1						
22	350	2.7						
23	350	2.7						

Time: 30.0°E.
Length of time sweep: Manual operation
Average values.

Table 59

Leningrad, U.S.S.R. (LIRS Ionosphere Station) (59.9oN, 30.3°E) November 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	390	3.0						
01	380	2.8						
02	390	2.9						
03	380	2.9						
04	380	3.1						
05	380	3.3						
06								
07								
08								
09	280	6.2						
10	280	6.2						
11	280	6.4						
12	290	6.4						
13	280	6.4						
14	290	6.3						
15	290	6.3						
16	290	6.2						
17	290	5.9						
18	290	5.5						
19								
20	310	3.9						
21	330	3.4						
22	350	3.1						
23	370	3.3						

Time: 30.0°E.
Length of time sweep: 1.5 Mc to 9.0 Mc in five to ten minutes. Manual operation.
Average values.

Table 60

Sverdlovsk, U.S.S.R. (56.7°N, 61.1°E) November 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		2.7						
01		2.8						
02		2.8						
03		2.9						
04		2.7						
05		2.6						
06		2.7						
07		3.8						
08		6.0						
09		7.6						
10		8.6						
11		8.7						
12		8.6						
13		8.5						
14		7.9						
15		7.3						
16		6.3						
17		5.4						
18		4.2						
19		3.5						
20		2.8						
21		2.6						
22		2.6						
23		2.6						

Time: 60.0°E.
Length of time sweep: 1.5 Mc to 14.0 Mc in five to thirteen minutes. Manual operation.
Median values.

Table 61

Tomsk, U.S.S.R. (56.4°N, 84.9°E) November 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	290	2.8						
01	290	2.8						
02	290	2.8						
03	290	2.8						
04	280	2.9						
05	270	2.9						
06	270	2.8						
07	250	3.0						
08	230	5.2				1.4		
09	220	6.8			110	2.1		
10	220	7.9			100	2.4		
11	230	9.0			100	2.6		
12	200	9.4			100	2.6		
13	220	8.8			100	2.5		
14	220	8.6			110	2.4		
15	220	8.0			100	2.2		
16	220	7.2			100	1.8		
17	220	6.0						
18	220	5.0						
19	230	3.8						
20	240	3.0						
21	260	2.6						
22	280	2.6						
23	290	2.7						

Time: 90.0°E.
Length of time sweep: 1.2 Mc to 10.0 Mc in five to ten minutes. Manual operation.
Average values.

Table 62

Moscow, U.S.S.R. (55.9°N, 37.3°E) November 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	400	3.0						
01	380	3.0						
02	380	2.8						
03	370	2.8						
04	360	2.8						
05	350	2.8						
06	310	3.1						
07	260	4.4						
08	240	6.5				2.8		
09	240	7.6				2.4		
10	240	8.4				2.9		
11	250	8.5				2.6		
12	250	8.2				2.5		
13	240	8.0				2.6		
14	240	7.7				2.3		
15	240	6.8				2.1		
16	230	6.1						
17	230	5.3						
18	260	4.2						
19	280	3.5						
20	320	3.1						
21	360	2.6						
22	380	2.6						
23	380	2.9						

Time: 30.0°E.
Length of time sweep: 1.8 Mc to 11.0 Mc in ten minutes. Manual operation.
Average values.

Table 63

Slough, England (51.5°N, 0.6°W) November 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00		3.3						
01		3.4						
02		3.3						
03		3.0						
04		2.9						
05		2.8						
06		2.6						
07		3.8						
08		6.1						
09		7.3						
10		7.8						
11		8.4						
12		8.2						
13		7.8						
14		7.8						
15		7.5						
16		6.6						
17		5.9						
18		5.0						
19		4.0						
20		3.2						
21		3.0						
22		3.2						
23		3.2						

Time: 0.0°.
Length of time sweep: 0.5 Mc to 16.0 Mc in one minute.
Median values.

Table 64

Alma Ata, U.S.S.R. (43.2°N, 76.9°E) November 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	210	3.4						
01	200	3.4						
02	200	3.4						
03	210	3.5						
04	200	3.8						
05	200	3.9						
06	200	4.6						
07	200	6.0			110	2.6		
08	200	6.4			100	2.8		
09	200	6.9			120	3.3		
10	200	7.2			120	3.6		
11	200	7.0			100	4.0		
12	200	7.2			100	4.2		
13	190	7.2			120	3.9		
14	200	7.1			100	4.2		
15	200	7.3			110	3.3		
16	190	6.8			110	3.1		
17	200	5.9			100	3.3		
18	210	4.6						
19	200	4.6						
20	200	4.2						
21	210	3.8						
22	210	4.0						
23	210	3.4						

Time: 75.0°E.
Length of time sweep: 2.0 Mc to 14.0 Mc in ten to twenty minutes. Manual operation.
Average values.

Table 65

(Corrections and additions to previously published provisional data)

Maui, Hawaii (20.8°N, 156.5°W) November 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								3.3
02	255							
03								
04	250							
05	300							
06								
07								
08					110	---		
09	275				110			
10	275				110			
11	275	12.8	212		110			
12					110			
13	275				110			
14					110			
15			225		110	---	3.7	
16	240				110	---	3.6	
17	225							
18	210							
19	205							
20	225							
21								
22								
23	248	4.5						3.1

Time: 150.0°W.
Length of time sweep: 2.2 Mc to 16.0 Mc in one minute.
Median values.

Table 66

(Corrections and additions to previously published provisional data)

Watheroo, W. Australia (30.3°S, 115.9°E) November 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	5.8					3.8	
01	250						3.9	
02	249						4.0	
03	254						4.1	
04	248						3.4	
05	251	4.6					2.9	
06	240	5.7				2.1	3.3	
07	259		225	4.3		2.7	4.1	
08	320	6.7	220	4.6		3.1	4.4	
09	340	7.3	215	4.9		3.3	4.9	
10	349	7.8	218	5.0		3.5	4.2	2.9
11	347	8.6	215	5.1		3.6	4.4	
12	335		220	5.0		3.6	4.5	
13	324	9.8	220	5.0		3.6	4.7	2.8
14	321	9.5	230	4.9		3.5	4.7	2.8
15	314	9.2	230	4.8		3.4	4.7	
16	298		225	4.4		3.1	4.2	
17	259	8.7	232	4.1		2.6	4.0	
18	256	8.5				1.8	3.6	
19	236	8.3				3.0	3.0	
20	235	7.2				3.0	3.0	
21	248					2.8	2.8	
22	268	6.0				2.9	2.9	2.8
23	275	5.9				3.0	3.0	

Time: 120.0°E.
Length of time sweep: 16.0 Mc to 0.5 Mc in fifteen minutes.
Median values.

Table 67

Bukhta Tikhaya, U.S.S.R. (80.3°N, 52.7°E) October 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	5.7						
01	250	4.9						
02								
03								
04								
05								
06								
07								
08								
09								
10	270	5.9						
11								
12	250	6.1						
13								
14	260	5.9						
15								
16								
17								
18								
19	270	6.5						
20								
21								
22	260	6.2						
23								

Time: 60.0°E.
Length of time sweep: 1.5 Mc to 9.5 Mc in five to ten minutes. Manual operation.
Average values.

Table 68

Leningrad, U.S.S.R. (WETKAS, Ionosphere Station) (60.0°N, 30.3°E) October 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	360	4.0						
01	340	3.7						
02	350	4.0						
03	330	3.5						
04	330	3.5						
05	330	3.1						
06	290	4.2	250	2.2				
07	270	5.1	240	3.7	120	1.8		
08	260	5.6	240	3.8	120	2.2		
09	250	6.2	220	3.9	120	2.3		
10	260	6.5	240	3.9	120	2.3		
11	260	6.8	220	4.1	120	2.5		
12	270	6.7	230	4.1	120	2.5		
13	260	6.7	220	4.1	120	2.4		
14	260	6.8	230	3.9	120	2.4		
15	250	6.6	220	3.8	120	2.2		
16	260	6.0	230	3.7	120	1.8		
17	250	5.8	220	3.6	130	1.9		
18	260	5.4	240	3.1				
19	250	5.1						
20	250	4.5						
21	290	4.4						
22	300	4.1						
23	320	3.7						

Time: 30.0°E.
Length of time sweep: Manual operation.
Average values.

Table 69

Leningrad, U.S.S.R. (LIRS, Ionosphere Station) (59.9°N, 30.3°E) October 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	340	3.4						
01	350	3.3						
02	340	3.1						
03	350	3.2						
04	350	3.2						
05								
06								
07								
08	290	5.2						
09	280	5.6						
10	280	5.8						
11	280	5.9						
12	280	6.1						
13	280	6.1						
14	270	5.9						
15	270	5.9						
16	280	5.9						
17	280	6.0						
18								
19	310	5.1						
20	300	4.8						
21	320	3.8						
22	340	3.9						
23	340	3.7						

Time: 30.0°E.
Length of time sweep: 1.5 Mc to 9.0 Mc in five to ten minutes. Manual operation.
Average values.

Table 71

Slough, England (51.5°N, 0.6°W) October 1945

Time	*h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	367	3.6						2.7
01	358	3.6						2.7
02	356	3.6						2.7
03	346	3.4						2.8
04	324	3.0						2.9
05	304	2.6						3.0
06	318	3.2						3.0
07	255	5.6						3.4
08	254	6.8						3.4
09	257	7.6						3.3
10	269	8.0						3.3
11	268	8.2						3.3
12	276	8.4						3.2
13	271	8.2						3.2
14	280	8.2						3.2
15	269	8.0						3.3
16	266	8.2						3.3
17	264	7.7						3.3
18	275	7.4						3.2
19	287	6.1						3.1
20	291	5.0						3.0
21	331	4.3						2.8
22	350	3.9						2.7
23	362	3.7						2.7

Time: 0.0°.
Length of time sweep: 0.5 Mc to 16.0 Mc in one minute.
Median values.
*Designated on original data sheet as h_m for region F.

Moscow, U.S.S.R. (55.9°N, 37.3°E) October 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	370	3.6						
01	370	3.6						
02	370	3.4						
03	360	3.2						
04	360	3.1						
05	350	3.2						
06	300	4.2						
07	280	5.6		1.8		2.0		
08	270	6.6		2.7		2.5		
09	270	7.2		2.9		3.0		
10	270	7.7		3.0		3.0		
11	260	7.9		3.1		3.1		
12	260	7.9		3.2		2.8		
13	270	7.9		3.0		2.7		
14	270	7.8		2.9		2.5		
15	250	7.4		2.0		2.3		
16	240	6.9		1.7		2.0		
17	240	6.5						
18	240	6.2						
19	250	5.4						
20	270	4.8						
21	310	4.4						
22	330	3.8						
23	370	3.6						

Time: 30.0°E.
Length of time sweep: 1.8 Mc to 11.0 Mc in ten minutes. Manual operation.
Average values.

Table 72

(Corrections and additions to previously published provisional data)

Sverdlovsk, U.S.S.R. (56.7°N, 61.1°E) September 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								3.0
01								3.1
02								3.0
03	250							3.0
04								3.0
05								3.2
06					110			3.4
07	195		---	---				3.5
08	200			3.9				3.4
09		180		4.1				3.4
10								3.3
11	245			4.4				3.4
12	230							3.4
13		170		4.3				3.5
14	195							3.4
15	190	185		4.2				3.5
16	200					2.4		3.5
17					100			3.5
18					100	1.8		3.5
19								3.4
20							2.5	3.3
21								3.2
22								3.2
23								3.1

Time: 60.0°E.
Length of time sweep: 1.5 Mc to 14.0 Mc in five to thirteen minutes. Manual operation.
Median values.

Table 73

Tomsk, U.S.S.R. (56.5°N, 84.9°E) September 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	250	3.7						
01	270	3.4						
02	270	3.2						
03	270	3.2						
04	260	3.1						
05	250	3.3						
06	250	3.9			110	1.6		
07	240	4.9	230		110	2.0		
08	250	5.5	220	3.6	110	2.4		
09	270	6.2	220	3.7	110	2.8		
10	280	6.4	220	4.0	100	3.0		
11	280	6.6	220	4.1	100	3.0		
12	270	7.0	210	4.2	100	3.1		
13	270	7.1	210	4.1	100	3.0		
14	260	7.0	210	4.0	100	2.9		
15	260	6.7	220		100	2.6		
16	250	6.5	220	3.6	100	2.4		
17	240	6.3	220	3.6	100	2.3		
18	230	6.0			100	1.8		
19	220	5.9			110	1.6		
20	230	5.6						
21	230	5.2						
22	240	4.6						
23	210	4.1						

Time: 90.0°E.
Length of time sweep: 1.2 Mc to 10.0 Mc in five to ten minutes. Manual operation.
Average values.

Table 74

Slough, England (51.5°N, 0.6°W) September 1945

Time	*h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	343	4.3						2.8
01	334	4.0						2.8
02	344	3.8						2.8
03	341	3.6						2.8
04	324	3.5						2.9
05	294	3.2						3.0
06	256	4.5						3.3
07	250	5.3						3.3
08	259	5.6						3.3
09	252	6.1						3.3
10	267	6.4						3.3
11	274	6.5						3.2
12	274	6.4						3.2
13	282	6.5						3.1
14	282	6.2						3.2
15	284	6.2						3.2
16	284	6.4						3.1
17	290	6.7						3.1
18	287	6.7						3.1
19	294	6.9						3.1
20	296	6.1						3.1
21	299	5.6						3.0
22	318	4.9						2.9
23	334	4.4						2.8

Time: 0.0°.
Length of time sweep: 0.5 Mc to 16.0 Mc in one minute.
Median values.
*Designated on original data sheet as h_m for region F.

Table 75

(Corrections and additions to previously published provisional data)

Rarotonga I. (21.4°S, 159.6°W) September 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06								
07								
08								
09			218					3.2
10								
11		8.4						
12								
13		7.4		4.7				
14								
15	285	7.4	208					
16								
17	250						2.7	
18								
19								
20								
21		7.5						
22								
23		6.8						

Time: 157.5°W.
Length of time sweep: 2.0 Mc to 16.0 Mc. Manual operation.
Median values.

Table 76

(Corrections and additions to previously published provisional data)

Sverdlovsk, U.S.S.R. (56.7°N, 61.1°E) August 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	230	4.3						3.1
01								3.1
02	240							3.0
03	240							3.0
04								3.1
05					120			3.2
06	200			3.7	105			3.2
07	230			4.0				3.2
08	285			4.3				3.2
09	275		185					3.2
10	270	6.1		4.4			3.7	3.2
11	270			4.4			3.8	3.2
12	270							3.2
13								3.3
14	270			4.3				3.3
15			185					3.3
16				4.0				3.4
17	220		185					3.4
18	200		---	---				3.4
19			---	---	115			3.3
20	200				---			3.3
21								3.2
22	200							3.2
23								3.2

Time: 60.0°E.
Length of time sweep: 1.5 Mc to 14.0 Mc in five to thirteen minutes. Manual operation.
Median values.

Table 77

(Corrections and additions to previously published provisional data)

Tomsk, U.S.S.R. (56.5°N, 84.9°E) August 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300							
01	290							
02	280							
03	280							
04	280							
05	260				110	1.8		
06	310		240	3.4	110	2.0		
07	320		230	3.7	100	2.5		
08	340		230	3.9	100	2.7		
09	310		220	4.2	100	3.3		
10	300							
11	300		200	4.4	100	3.5		
12	280	6.2						
13	300		220	4.4				
14	330		240	4.3		3.4		
15	300		230	4.0	100	3.2		
16	300		220	3.9	100	3.0		
17	300		230	3.7	100	2.6		
18	290		230	3.6	100	2.5		
19	280		240	3.5	110	2.0		
20	280		240	3.2	110	1.6		
21	260							
22	240							
23	270							

Time: 90.0°E.
Length of time sweep: 1.2 Mc to 10.0 Mc in five to ten minutes. Manual operation.
Average values.

Table 78

Slough, England (51.5°N, 0.6°W) August 1945

Time	*h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	324	4.4						2.8
01	334	3.9						2.8
02	341	3.7						2.8
03	334	3.5						2.8
04	317	3.5						2.9
05	286	4.1						3.1
06	268	4.7						3.2
07	277	5.1						3.2
08	280	5.3						3.2
09	286	5.6						3.1
10	270	5.9						3.2
11	286	5.9						3.1
12	310	5.8						3.0
13	294	5.9						3.1
14	298	5.7						3.1
15	298	5.6						3.0
16	302	5.6						3.0
17	300	5.9						3.0
18	304	6.0						3.0
19	300	6.5						3.0
20	298	6.8						3.1
21	299	6.2						3.0
22	311	5.5						3.0
23	319	4.8						2.9

Time: 0.0°.
Length of time sweep: 0.5 Mc to 16.0 Mc in four minutes.
Median values.
*Designated on original data sheet as h_m for region F.

Table 79

(Corrections and additions to previously published provisional data)

Rarotonga I. (21.4°S, 159.6°W) August 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11	262	8.0	210					
12								
13		6.8	202					3.3
14								
15								
16								
17							2.7	
18								
19	228							
20								
21								
22								
23								

Time: 157.5°W.
Length of time sweep: 2.0 Mc to 16.0 Mc. Manual operation.
Median values.

Table 80

(Corrections and additions to previously published data)

Sverdlovsk, U.S.S.R. (56.7°N, 61.1°E) July 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.1						3.2
01	230	4.5					2.4	3.0
02		4.3					2.5	3.1
03		3.9						3.1
04			---	---	---	---		3.1
05	220		200					3.1
06	280	5.3			100			3.1
07	300	5.4					3.9	3.2
08	300	5.4					4.3	3.1
09			180				4.3	3.2
10	300						4.2	3.2
11		6.2					4.2	3.1
12		6.2		4.6		3.3	4.2	3.2
13		6.3						3.2
14	280	6.0						3.2
15		5.9		4.3		3.1		3.2
16				4.3				3.2
17			200	4.2			3.8	3.2
18	235			3.7	100		3.7	3.3
19	200	5.5			110		3.8	3.4
20		5.3					2.7	3.4
21		5.5					2.7	3.2
22		5.8					2.8	3.1
23		5.4						3.2

Time: 60.0°E.
Length of time sweep: 1.5 Mc to 14.0 Mc in five to thirteen minutes. Manual operation.
Median values.

Above data are tabulations sent from U.S.S.R. and supersede final data published in Table 31, IRPL-F15.

Table 81

Slough, England (51.5°N, 0.6°W) July 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.0						
01		4.7						
02		4.2						
03		3.8						
04		3.8						
05		4.4						
06		4.8						
07		5.4						
08		5.5						
09		5.9						
10		5.9						
11		5.9						
12		5.6						
13		5.8						
14		5.6						
15		5.7						
16		5.6						
17		5.6						
18		5.8						
19		6.4						
20		6.6						
21		6.4						
22		6.0						
23		5.4						

Time: 0.0°.
Length of time sweep: 0.5 Mc to 16.0 Mc in four minutes.
Median values.

Table 82

(Corrections and additions to previously published provisional data)

Raretonga I. (21.4°S, 159.6°W) July 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05		2.7		---				
06								
07								
08								
09		6.5						
10								
11	256			4.5				
12								
13	288							
14								
15							3.6	
16								
17							3.5	
18								
19							3.1	
20								
21								
22								
23								

Time: 157.5°W.
Length of time sweep: 2.0 Mc to 16.0 Mc. Manual operation.
Median values.

Table 83

(Corrections and additions to previously published data)

Sverdlovsk, U.S.S.R. (56.7°N, 61.1°E) June 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	225	5.6					3.1	
01	230	5.2					3.0	
02		4.9						
03		4.8					3.0	
04	220	5.0	---	---	110			
05	260		200		100			
06	265	5.9					3.8	
07	280		200				3.8	
08	280						5.0	
09	280		190				5.2	
10	280						4.8	
11	270	6.5					5.2	
12	270					3.2	4.3	
13							4.2	
14		6.1					3.8	
15	270	5.9						
16		5.7	180					
17	255						3.8	
18	225	5.7		---			4.6	
19	200						4.2	
20		6.0					4.0	
21	210	6.3					4.0	
22							3.3	
23		6.1					3.9	

Time: 60.0°E.
Length of time sweep: 1.5 Mc to 14.0 Mc in five to thirteen minutes.
Manual operation.
Median values.

Above data are tabulations sent from U.S.S.R. and supersede final data published in Table 54, IRPL-F14.

Table 84

(Corrections and additions to previously published provisional data)

Raretonga I. (21.4°S, 159.6°W) June 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01		3.3						
02								
03								
04								
05		2.8						
06								
07		5.0						
08								
09		7.1						
10								
11								
12								
13								
14								
15							3.2	
16								
17							3.3	
18								
19								
20								
21								
22								
23		3.4						

Time: 157.5°W.
Length of time sweep: 2.0 Mc to 16.0 Mc. Manual operation.
Median values.

Table 35

(Corrections and additions to previously published data)

Rarotonga I. (21.4°S, 159.6°W) May 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00								
01		3.3						
02								
03								
04								
05								
06								
07		5.3						
08								
09		8.8					3.0	
10								
11		7.8						
12		7.9						
13		7.8						
14								
15		7.0		4.2			3.7	
16								
17		7.5					3.3	
18								
19		5.4					2.4	
20								
21								
22								
23		3.4						

Time: 157.5°W.
Length of time sweep: 2.0 Mc to 16.0 Mc. Manual operation.
Median values.

Previously published final values appeared in Table 34 IRPL-F11.

Table 36

Trinidad, Brit. West Indies (10.6°N, 61.2°W) April 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	260	7.4						2.9
01	250	7.0						3.1
02	225	6.1						3.1
03	240	4.8						3.2
04	242	3.8						3.0
05	260	3.2						2.9
06	250	4.2						3.1
07	250	6.2			110	2.4		3.2
08	290	7.3	245	4.4	110	2.9		3.0
09	340	8.4	250	4.7	120	3.3		2.9
10	350	9.6	250	4.8	120	3.5		2.8
11	340	10.9	240	4.8	120	3.5		2.8
12	330	12.1	250	4.8	115	3.6	3.6	2.9
13	320	12.8	245	4.8	120	3.6	3.9	2.9
14	300	11.9	230	4.7	120	3.4		3.0
15	300	11.8	235	4.6	120	3.2	3.6	2.9
16	300	11.2	250	4.3	120	2.8	3.4	2.9
17	250	10.6				2.4	3.0	3.0
18	255	10.1					2.8	3.0
19	240	8.8						2.8
20	250	8.3						2.8
21	260	8.1						2.8
22	270	7.9						2.9
23	270	7.6						2.9

Time: 60.0°W.
Length of time sweep: Manual operation.
Median values.

Table 37

(Corrections and additions to previously published data)

Rarotonga I. (21.4°S, 159.6°W) April 1945

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00								
01		3.9						
02								
03		3.7						
04								
05		3.3						
06								
07		6.4						
08								
09		8.9		4.4				
10								
11								
12								
13		9.0					4.4	
14								
15		9.9				3.2	4.7	
16								
17							4.0	
18								
19		6.9					3.6	
20								
21		5.2					2.6	
22								
23		4.6						

Time: 157.5°W.
Length of time sweep: 2.0 Mc to 16.0 Mc. Manual operation.
Median values.

Previously published final values appeared in Table 31 IRPL-F10.

Table 88

(Corrections and additions to previously published data)

Rarontonga I. (21.4°S, 159.6°W) March 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								2.9
02								
03								2.8
04								
05		3.8						2.9
06								
07	250	6.9				2.2		3.4
08								
09	270	8.6	235			3.1	4.2	3.4
10								
11	300	9.8	230	4.8			4.2	3.1
12								
13	280	10.4	220					3.2
14								
15	280	9.0	232	4.5		3.3	3.4	3.3
16								
17	250	8.4	250	---			4.0	3.3
18								
19	250	7.0				---	3.9	3.1
20								
21		6.1					3.7	2.8
22								
23		6.0					3.0	2.9

Time: 157.5°W.
Length of time sweep: 2.0 Mc to 16.0 Mc. Manual operation.
Median values.

Previously published final values appeared in Table 42, IRPL-F10.

Table 89

(Corrections and additions to previously published data)

Rarotonga I. (21.4°S, 159.6°W) February 1945

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05	---	3.7						(2.8)
06		(3.9)						(3.0)
07	256	6.3	245	3.5				3.3
08								
09	310	8.0	230	4.6				3.1
10								
11	335	10.0	235	4.8				2.9
12								
13	305	11.9	240	4.8				(3.1)
14								
15	295		245					3.1
16								
17	295	9.4	245	4.1				3.0
18								
19	255	8.0						3.1
20	---	7.0						2.9
21								
22								
23								

Time: 157.5°W.
Length of time sweep: 2.0 Mc to 16.0 Mc. Manual operation.
Median values.

Previously published final values appeared in Table 31, IRPL-F8.

TABLE 90

IONOSPHERE DATA-I

Washington, D.C. (Location) Ionosphere Station

National Bureau Of Standards (Institution)

Hourly values of $h'F_2$ in [illegible] for March (Month) 1946

Records measured by: J.M.C. A.K.B.

TIME: 75° W MERIDIAN

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	320	300	240	260	240	300	(290)	260	220	230	260	300	270	260	(280)	260	240	240	230	230	250	240	270	250
2	260	260	260	280	290	280	260	240	250	240	240	280	260	270	250	270	240	230	220	220	220	230	240	240
3	260	250	240	270	250	240	240	230	230	230	260	270	250	270	250	270	230	240	220	220	230	240	230	270
4	280	270	270	260	270	280	280	250	220	240	260	270	270	260	260	260	250	240	230	230	230	260	250	250
5	260	270	270	270K	270K	250K	300K	240K	270K	310K	380K	370K	370K	(380)K	320K	(310)K	320K	270K	260K	240K	250K	260	290	300
6	300	280	290	260	270	270	250	240	220	260	260	260	280	270	290	270	270	240	230	220	240	240	250	270
7	270	280	250	240	230	250	270	230	230	240	250	270	260	250	250	260	260	230	220	210	230	230	250	260
8	260	260	260	250	240	240	250	230	230	230	240	250	250	300	260	250	250	230	230	220	230	230	250	240
9	260	270	270	270	250	230	220	230	230	230	260	250	280	(250)	250	260	250	220	230	220K	220K	260K	250K	280K
10	280K	290K	230K	230K	270K	300K	320K	250K	(270)K	320K	410K	380K	510K	410K	400K	350K	400K	300K	270K	260K	310K	250K	300K	340K
11	350K	420K	350K	300K	310K	290K	280K	250K	280K	270K	390K	380K	430K	410K	410K	370K	300K	290K	240K	220K	250K	240K	250K	300K
12	310K	300K	290K	300K	280K	290K	280	230	240	250	280	300	290	290	270	270	270	240	230	220	230	240	260	280
13	290	(280)	270	260	270	250	250	240	250	250	260	270	290	280	280	280	230	250	230	220	240	240	240	260
14	270	300	270	260	240	260	(270)	230	230	240	260	280	280	260	270	260	260	230	220	220	230	230	260	260
15	270	280	240	240	260	280	(280)	240	260	250	260	270	270	270	270	250	240	240	220	220	240	230	240	250
16	260	260	250	260	240	240	260	240	230	240	250	280	270	270	260	250	250	240	230	230	230	250	290	300
17	280	270	290	260	250	270	260	250	260	310	300	290	280	300	290	270	260	250	230	220	230	240	260	270
18	270	250	250	260	240	270	260	230	240	250	280	270	280	270	300	270	250	230	220	230	220	240	270	260
19	260	270	250	250	230	250	260	240	250	250	270	270	280	290	290	270	270	250	240	220	240	250	270	270
20	270	270	250	250	260	260	270	230	250	260	270	280	290	280	270	270	250	230	240	240	230	250	250	270
21	270	290	270	290	260	250	250	240	250	250	250	280	290	270	280	270	250	250	240	220	230	250	260	270
22	280	270	280	290	350	320	280	250	270	270	300	330	280	300	300	290	270	240	240	240	250	270	270	280
23	280	280	270	280	270	250	250	240	270	270	320	310	300	300	300	280	270	260	250	300K	390K	[463]AK	460K	450K
24	(370)K	330K	300K	310K	310K	(300)K	370K	GK	GK	GK	GK	BK	GK	GK	690K	520K	440K	310K	280K	260K	300K	340K	400K	(400)K
25	(430)K	(470)K	(400)K	BK	AK	AK	(420)K	GK	GK	GK	GK	GK	GK	GK	760K	600K	CK	CK	300K	(370)K	490K	(420)K	(400)K	(490)K
26	(500)K	400K	(430)K	370K	380K	(290)K	270K	260	250	270	290	330	300	280	290	280	270	270	240	230	250	230	250K	300K
27	330K	330K	310K	(280)K	300K	310K	290K	280K	300K	CK	CK	CK	400K	440K	460K	410K	390K	360K	280K	240K	250K	250K	260K	250K
28	320K	360K	360K	350K	370K	400K	420K	BK	BK	BK	BK	GK	GK	CK	GK	GK	GK	490K	300K	270K	(350)K	(450)K	(350)K	370K
29	(280)K	310K	250K	290K	260K	310K	240	220	240	260	270	270	300	290	290	290	280	250	240	220	220	230	260	270
30	270	250	250	250	250	270	260	250	250	250	260	270	280	270	270	280	250	250	240	230	230	230	250	270
31	290	290	290	260	250	250	240	240	260	270	260	310	290	310	310	290	270	270	250	230	240	250	240	270
Sum																								
Median	280	280	270	260	260	270	270	240	250	250	260	280	280	280	290	270	260	245	240	230	240	240	260	270

TABLE 91

IONOSPHERE DATA- 2

Washington, D.C. (Location) Ionosphere Station

National Bureau Of Standards (Institution)

Hourly values of $f^{o}F_{2}$ in {Mc/sec} for March (Month) 1946

Records measured by: J.M.C. A.K.B.

TIME: 75° W MERIDIAN

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	4.7	5.3	5.5	5.0	(3.2)^{F}	(3.2)^{F}	3.3^{F}	5.2	(7.4)	7.6	8.8	10.4	10.4	(10.3)	(10.6)	(10.6)	10.6	9.6	8.8	8.0	(7.0)	6.2	6.2	6.2
2	6.1	5.8	4.5	4.3	4.3	3.9^{F}	3.8	5.6	8.0	9.2	9.6	10.8	11.0	11.0	10.4	10.4	10.2	9.6	9.0	8.4	6.8	6.2	6.0	5.3
3	5.1	4.9	4.4	4.4^{F}	4.0	3.8^{F}	3.8^{F}	6.4	8.4	9.0	10.4	11.0	11.0	11.0	10.9	10.4	10.4	10.4	(9.6)	9.0	7.6	7.0	5.8	6.0
4	5.7	5.8	5.7	5.3	5.0	5.0	5.0	6.7	8.6	10.0	11.5	(11.5)	11.6	(11.6)	(11.7)	11.4	11.4	(11.0)	(10.4)	8.8	(7.8)	(6.2)	5.9	6.0
5	4.8	4.5^{F}	3.8^{F}	3.5$^{F}_{K}$	(3.3)$^{F}_{K}$	(3.4)$^{F}_{K}$	(2.2)$^{F}_{K}$	5.7^{K}	6.8^{K}	6.8^{K}	6.6^{K}	7.0^{K}	7.2^{K}	7.0^{K}	7.4^{K}	7.2^{K}	7.2^{K}	7.0^{K}	(7.2)^{K}	6.8^{K}	5.9^{K}	5.6	(5.2)	5.1
6	5.0	5.0	4.8	4.7^{F}	(3.6)^{F}	3.6^{F}	3.7^{F}	5.7	7.2	8.8	9.8	10.4	11.0	10.6	11.0	10.4	10.2	(9.5)	(9.6)	8.4	(7.8)	(6.5)	6.0	5.6
7	5.2	5.4	5.0	4.9^{F}	4.3^{F}	3.5^{F}	3.8^{F}	6.6	(9.2)	9.4	10.6	11.4	11.5	11.2	11.3	11.0	11.2	10.8	(9.6)	8.0	7.8	(6.4)	6.1	6.2
8	5.7	5.5	5.2	5.0	4.7^{F}	4.2^{F}	(4.3)^{F}	7.1	8.6	9.2	10.2	11.0	11.5	11.0	11.5	11.0	10.8	(10.6)	(10.5)	(9.0)	(8.2)	6.8	(6.2)	6.0
9	5.6	5.6	5.3	5.2	5.1	5.0^{F}	4.8^{F}	7.0	9.2	10.2	10.5	10.8	11.1	10.7	(11.5)	(11.8)	12.0	(11.2)	11.3	9.4^{K}	(8.0)^{K}	8.0^{K}	7.6^{K}	6.6^{K}
10	6.6^{K}	6.8^{K}	5.8^{K}	5.8^{K}	4.1^{K}	4.0^{K}	4.0^{K}	(6.2)^{K}	(6.8)^{K}	7.4^{K}	6.7^{K}	7.2^{K}	6.4^{K}	6.4^{K}	6.2^{K}	6.2^{K}	6.4^{K}	6.8^{K}	7.0^{K}	4.3$^{F}_{K}$	(2.3)$^{F}_{K}$	(2.0)$^{F}_{K}$	(1.8)$^{F}_{K}$	(2.0)$^{F}_{K}$
11	(1.7)$^{F}_{K}$	(1.7)$^{F}_{K}$	1.6$^{F}_{K}$	1.6$^{F}_{K}$	1.6$^{F}_{K}$	1.6$^{F}_{K}$	2.3$^{F}_{K}$	4.7$^{F}_{K}$	5.6^{K}	5.5^{K}	5.8^{K}	6.2^{K}	5.9^{K}	6.0^{K}	6.2^{K}	6.2^{K}	6.5^{K}	6.5^{K}	(6.6)^{K}	6.0^{K}	5.6^{K}	5.0^{K}	4.0$^{F}_{K}$	3.4$^{F}_{K}$
12	3.3$^{F}_{K}$	3.1$^{F}_{K}$	2.7$^{F}_{K}$	2.5$^{F}_{K}$	2.3$^{F}_{K}$	2.1$^{F}_{K}$	2.7^{F}	5.5	7.0	7.3	8.6	8.5	9.1	9.0	8.6	8.6	8.8	8.6	8.4	7.3	6.8	5.8	5.0^{F}	4.8^{F}
13	(4.7)^{F}	4.3^{F}	(4.2)^{F}	4.0^{F}	4.0^{F}	3.9^{F}	4.0^{F}	6.2	7.7	8.4	8.8	9.7	10.0	10.1	9.7	9.8	(9.8)	9.6	(9.4)	(7.9)	(7.2)	(6.5)	(5.8)	5.0
14	4.8^{F}	4.7^{F}	4.8^{F}	4.7^{F}	4.4^{F}	3.7^{F}	3.8^{F}	6.7	(8.1)	9.1	9.8	10.5	10.6	10.0	10.4	10.3	10.2	10.1	(9.4)	(7.9)	(7.0)	6.2	5.8	5.8
15	5.5	5.4	5.0	4.6	4.0^{F}	3.2^{F}	3.0^{F}	5.6	6.8	7.6	8.4	9.4	9.7	9.8	10.4	10.4	10.0	9.6	9.6	8.2	7.3	6.6	6.2	5.5^{F}
16	4.8^{F}	4.6^{F}	4.5^{F}	3.9^{F}	(3.4)^{F}	(3.0)^{F}	(3.2)^{F}	5.9	7.3	(8.2)^{J}	9.0	9.8	10.4	10.4	10.4	10.2	10.0	10.0	(9.0)	(8.4)	(7.0)	(6.0)	5.5^{F}	5.5^{F}
17	5.8	5.1^{F}	4.9^{F}	4.7^{F}	4.0^{F}	4.1^{F}	4.2	5.4	5.9	6.6	7.6	8.6	8.7	8.4	9.2	9.4	8.8	9.0	8.4	(7.7)	(6.2)	5.9	5.8	5.5
18	5.2	4.9^{F}	4.3^{F}	4.0^{F}	3.7^{F}	3.6^{F}	4.9	7.1	8.4	8.8	9.6	9.6	9.8	9.8	10.3	10.3	10.0	(10.0)	(8.9)	(7.8)	6.7	(6.0)	(5.9)	(5.8)
19	5.3	4.9	4.8	4.4	3.8	3.6	4.0	6.0	7.4	8.4	9.0	9.4	9.2	9.3	10.4	(9.6)	9.7	9.2	(8.8)	(7.8)	6.9	(6.4)	(6.3)	6.0
20	(6.0)	6.0	5.5	5.0	(4.6)	4.2	4.4	6.4	7.2	9.2	10.2	10.0	10.3	10.6	10.4	9.8	9.8	9.6	9.4	8.6	7.0	6.4	5.8	5.5
21	5.1	5.1	4.9	4.8	4.6	4.3	4.5	6.8	7.8	8.6	9.2	9.3	10.0	9.6	(10.0)	9.8	9.6	9.2	(9.4)	7.8	7.0	(6.5)	6.0	(5.4)^{F}
22	(4.6)^{F}	4.1^{F}	(4.0)^{F}	(3.2)^{F}	2.8^{F}	(3.3)^{F}	3.6^{F}	4.9^{F}	6.2^{F}	6.4	7.6	8.3	9.7	9.6	9.4	9.7	(9.0)	8.8	8.0	7.6	6.8	6.2	6.0	(5.8)
23	5.9	5.6	5.2	5.1	4.8	4.4	4.3	5.3	6.4	7.0	8.0	8.6	9.3	9.8	9.9	10.1	(10.0)	9.4	8.9	8.7^{K}	(4.8)$^{F}_{K}$	[3.0]$^{A}_{K}$	(3.8)$^{F}_{K}$	4.3$^{F}_{K}$
24	(2.4)$^{F}_{K}$	3.5$^{F}_{K}$	3.5$^{F}_{K}$	3.2$^{F}_{K}$	3.0$^{F}_{K}$	3.0$^{F}_{K}$	3.2$^{F}_{K}$	<3.3$^{G}_{K}$	<3.7$^{G}_{K}$	<4.1$^{G}_{K}$	<4.2$^{G}_{K}$	B^{K}	<4.7$^{G}_{K}$	<4.8$^{G}_{K}$	5.1^{K}	5.3^{K}	5.5^{K}	5.7^{K}	5.6^{K}	5.6^{K}	4.8$^{F}_{K}$	3.3$^{F}_{K}$	(2.7)$^{F}_{K}$	2.5$^{F}_{K}$
25	2.2$^{F}_{K}$	2.3$^{F}_{K}$	(2.5)$^{F}_{K}$	B^{K}	A^{K}	A^{K}	2.4$^{F}_{K}$	<3.3$^{G}_{K}$	<3.6$^{G}_{K}$	<3.9$^{G}_{K}$	<4.2$^{G}_{K}$	<4.2$^{G}_{K}$	<(4.3)$^{G}_{K}$	<4.4$^{G}_{K}$	(4.8)^{K}	5.2$^{F}_{K}$	[6.6]$^{C}_{K}$	[5.6]$^{C}_{K}$	(4.2)$^{F}_{K}$	(1.9)$^{F}_{K}$	(1.7)$^{F}_{K}$	[2.4]$^{F}_{K}$	2.2$^{F}_{K}$	1.9$^{F}_{K}$
26	(1.8)$^{F}_{K}$	(2.9)$^{F}_{K}$	2.2$^{F}_{K}$	(1.9)$^{F}_{K}$	(1.3)$^{F}_{K}$	(1.6)$^{F}_{K}$	(2.8)^{K}	4.7	7.2	7.7	8.4	8.6	9.9	9.2	9.4	9.2	9.6	9.6	(9.6)	(8.8)	6.4	5.3	4.2^{K}	3.6$^{F}_{K}$
27	(2.4)$^{F}_{K}$	(2.5)$^{F}_{K}$	(2.5)$^{F}_{K}$	(2.2)$^{F}_{K}$	2.3$^{F}_{K}$	2.3$^{F}_{K}$	3.7^{K}	5.1^{K}	5.3^{K}	C^{K}	C^{K}	C^{K}	5.8^{K}	5.6^{K}	5.6^{K}	5.8^{K}	5.8^{K}	5.9^{K}	6.2^{K}	6.2^{K}	(6.1)^{K}	5.8^{K}	5.2^{K}	5.2^{K}
28	4.5^{K}	(4.0)^{K}	(3.4)$^{F}_{K}$	2.8$^{F}_{K}$	2.4$^{F}_{K}$	3.0$^{F}_{K}$	(2.5)$^{F}_{K}$	B^{K}	B^{K}	B^{K}	B^{K}	<(40)$^{G}_{K}$	<4.0$^{G}_{K}$	C^{K}	<(4.1)$^{G}_{K}$	<4.0$^{G}_{K}$	<3.9$^{G}_{K}$	5.0$^{F}_{K}$	(5.9)$^{F}_{K}$	2.9$^{F}_{K}$	1.9$^{F}_{K}$	(1.8)$^{F}_{K}$	(2.3)$^{F}_{K}$	(1.8)$^{F}_{K}$
29	(2.3)$^{F}_{K}$	(2.2)$^{F}_{K}$	(1.7)$^{F}_{K}$	(1.4)$^{F}_{K}$	(1.3)$^{F}_{K}$	(1.4)$^{F}_{K}$	(4.4)	6.0	8.8	(9.5)	9.0	(9.4)	9.4	9.4	9.1	8.6	9.0	8.8	8.8	(7.8)	6.6	5.9	5.4	5.2
30	5.3	4.8	4.5	4.0^{F}	3.6^{F}	2.7^{F}	4.0^{F}	6.0	6.9	8.0	8.4	9.2	9.2	9.2	9.2	9.2	8.6	8.6	8.8	8.4	7.3	6.8	5.8	5.3
31	5.1	4.7	4.6^{F}	4.0^{F}	3.8^{F}	3.4^{F}	4.6^{F}	6.4	7.1	7.2	8.0	8.8	9.4	(9.2)	9.2	9.2	9.0	9.0	8.6	(7.9)	7.4	(7.2)	6.8	6.4
Sum																								
Median	5.1	4.9	4.5	4.4	3.8	3.6	3.8	6.0	7.2	8.2	8.8	9.4	9.7	9.7	9.9	9.8	9.7	9.4	8.9	7.9	6.9	6.2	5.8	5.5

Table 10a

Ionospheric Storminess, March 1946

Day	Ionospheric Character* 00-12 GCT	12-24 GCT	Principal Storms Beginning GCT	End GCT	Geomagnetic Character** 00-12 GCT	12-24 GCT
March						
1	1	0			4	2
2	0	2			3	2
3	1	2			1	1
4	1	3			3	3
5	1	5	0800	———	3	3
6	2	1	———	0800	3	2
7	0	3			2	2
8	0	3			1	2
9	0	3			1	3
10	4	6	0000	———	4	4
11	6	6	———	———	3	3
12	4	2	———	1100	1	1
13	1	1			1	1
14	1	2			1	1
15	0	1			2	2
16	0	3			0	2
17	1	[illegible]			3	3
18	0	[illegible]			2	1
19	0	[illegible]			1	2
20	0	[illegible]			2	2
21	1	1			3	1
22	2	1			3	3
23	1	1			2	3
24	5	7	0000	———	5	5
25	7	7	———	———	6	7
26	7	1	———	1200	5	3
27	4	6	0300	———	3	3
28	4	7	———	———	6	8
29	5	2	———	1100	4	2
30	1	2			1	1
31	1	1			2	2

*Ionosphere character figure (I-figure) for ionospheric storminess at Washington, D.C., during 12-hour period, on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

**Average for 12 hours of American magnetic K-figure, determined by a number of observatories, on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

/Dashes indicate continuing storm.

Table 103

Sudden Ionosphere Disturbances Observed at Washington, D.C.

Day	GCT Beginning	GCT End	Locations of transmitters	Relative intensity at minimum*	Other phenomena
March					
1	1756	2000	Ohio, D.C., England, Mexico, New Brunswick, Surinam, Chile, Gold Coast, Hawaii	0.0	
2	1921	1930***	Ohio, D.C., New Brunswick	0.1	
	1936	2000	Chile, Gold Coast, Hawaii		
5	1128	1240	England, Surinam	0.0	
6	2011	2050	Ohio, D.C., Mexico, Hawaii	0.3	
8	1756	1845	Ohio, D.C., England, Mexico, New Brunswick, Surinam, Chile, Gold Coast, Hawaii	0.0	Terr.mag.pulse** 1800-1835
8	2141	2205	Ohio, D.C., New York, Mexico, Chile, Gold Coast	0.05	
12	1121	1145	Ohio	0.04	
18	1216	1245	New York, England, Surinam, Gold Coast	0.04	
19	2049	2120	Ohio, D.C., Mexico, Chile, Hawaii	0.01	Terr.mag.pulse** 2047-2120
20	1446	1510	Ohio, D.C., England, Surinam, Chile, Gold Coast	0.4	Terr.mag.pulse** 1415-1440
24	1548	1650	Ohio, D.C., New York, England, Mexico, New Brunswick, Chile, Gold Coast	0.0	
24	2006	2035	England	0.1	
28	2214	2305	Ohio, D.C., Mexico, New Brunswick	0.02	
29	1439	1510	Ohio, D.C., England, Mexico, Surinam, Chile, Gold Coast	0.02	

Table 103 (continued)

*Ratio of received field intensity during SID to average field intensity before and after, for station WSXAL, 6080 kilocycles, 600 kilometers distant, for all SID except those on 5, 18, and 24 March, which are for station GLE, 13525 kilocycles, received in New York, 5340 kilometers distant.

**As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

***Incomplete recovery of SID.

Table 104

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief, Cable and Wireless, Ltd.

Day	GCT Beginning	GCT End	Receiving Station	Locations of transmitters
February				
27	0620	0700	Brentwood, England	Greece, India, Iran, Kenya, Madagascar, South Rhodesia, Switzerland
27	1730	1800	Brentwood, England	Colombia
27	1730	1750	Somerton, England	Argentina, Barbados, Canada, New York
28	1810	2000	Brentwood, England	Chile, Colombia
28	1810	1849	Somerton, England	Argentina, Barbados, Canada, New York
March				
1	1815	1925	Brentwood, England	Colombia, Venezuela,
1	1815	1830	Somerton, England	Argentina, Barbados, Canada, New York
2	1020	1050	Brentwood, England	Kenya, Palestine, Portugal, South Rhodesia, Turkey, Yugoslavia
5	1130	1230	Brentwood, England	Austria, Belgian Congo, Bulgaria, Canary Islands, Chile, Curacao, Greece, India, Iran, Kenya, Madagascar, Mozambique, Palestine, Portugal, U.S.S.R., South Rhodesia, Spain, Switzerland, Syria, Thailand, Turkey, Uruguay, Yugoslavia, Zanzibar.
5	1130	1220	Somerton, England	Argentina, Ascension Island, Australia, Canada, Ceylon, China, Egypt, Gold Coast, India, New York, Union of South Africa

Table 104 (continued)

Day	GCT Beginning	GCT End	Receiving Station	Locations of transmitters
March				
6	0835	0920	Brentwood, England	Austria, Belgian Congo, Bulgaria, Canary Islands, French Equatorial Africa, Greece, India, Iran, Kenya, Madagascar, Mozambique, Palestine, Portugal, U.S.S.R., South Rhodesia, Spain, Syria, Thailand, Yugoslavia.
6	0840	0905	Somerton, England	Ascension Island, Barbados, Canada, China, Egypt, Gold Coast, India, Japan, New York, Union of South Africa

Table 105

Provisional Radio Propagation Quality Figures
February 1946
Compared with IRPL and ISIB Warnings and IRPL A-Zone Forecasts.

Day	North Atlantic Quality Figure 01-12 GCT	North Atlantic Quality Figure 13-24 GCT	North Atlantic IRPL Warning* 01-12 GCT	North Atlantic IRPL Warning* 13-24 GCT	North Atlantic ISIB Warning 01-12 GCT	North Atlantic ISIB Warning 13-24 GCT	North Atlantic A-Zone Forecast	North Atlantic Geomagnetic K_A 01-12 GCT	North Atlantic Geomagnetic K_A 13-24 GCT	North Pacific Quality Figure 01-12 GCT	North Pacific Quality Figure 13-24 GCT	North Pacific IRPL Warning 01-12 GCT	North Pacific IRPL Warning 13-24 GCT	North Pacific A-Zone Forecast	North Pacific Geomagnetic K_A 01-12 GCT	North Pacific Geomagnetic K_A 13-24 GCT
1	5	5					6	1	1	5	5			6	1	1
2	(4)	(4)		X			6	3	1	6	5		X	6	3	1
3	5	(4)					5	1	3	5	5			5	1	3
4	(4)	(4)	X				(4)	2	2	6	5	X		(4)	2	2
5	(4)	5					(3)	2	3	5	6			(3)	2	3
6	(4)	(4)				X	(3)	1	3	5	5			(3)	1	3
7	(3)	(2)		X	X	X	(4)	4	7	5	6		X	(4)	4	7
8	(2)	(2)	X	X	X	X	(4)	7	4	5	5	X	X	(4)	7	4
9	(3)	(4)	X	X	X		5	2	2	5	(4)	X	X	5	2	2
10	(4)	(4)	X	X		X	5	2	2	5	(4)	X	X	5	2	2
11	(4)	(4)	X	X			(4)	2	1	6	(4)	X	X	(4)	2	1
12	5	(4)					5	1	2	(4)	(4)			5	1	2
13	(4)	(4)					5	2	2	5	(4)			5	2	2
14	(4)	(4)	X				(4)	3	3	5	6	X		(4)	3	3
15	(4)	5	X				(4)	3	2	6	6	X		(4)	3	2
16	(4)	5					5	1	2	6	6			5	1	2
17	5	5					6	2	0	7	5			6	2	0
18	5	5					5	1	2	7	(4)			5	1	2
19	(4)	5					(4)	3	3	6	6			(4)	3	3
20	(4)	(4)	X				(4)	2	3	7	7	X		(4)	2	3
21	(3)	(3)		X	X	X	5	5	3	6	5		X	5	5	3
22	(3)	5	X	X			(4)	4	2	6	5	X	X	(4)	4	2
23	(3)	(4)	X	X		X	5	4	2	7	5	X	X	5	4	2
24	(3)	5	X	X	X	X	6	2	2	6	6	X	X	6	2	2
25	(4)	5			X	X	6	3	2	7	6			6	3	2
26	5	5					6	2	1	7	6			6	2	1
27	5	6					6	0	1	7	6			6	0	1
28	5	6					5	1	1	7	5			5	1	1

Score:				
H	14	9	11	3	1
M	8	13	11	3	5
G	6	6	6	11	12
(S)	0	0	0	6	7
S	0	0	0	5	3

*IRPL warnings broadcast on WWV, Washington, D.C. Times of warnings recorded to nearest half-day as broadcast.

Quality Figure and Forecast Scale:

1 = Useless
2 = Very poor
3 = Poor
4 = Poor to fair
5 = Fair
6 = Fair to good
7 = Good
8 = Very good
9 = Excellent

Symbols

X = Warning given.
H = Quality 4 or worse on day or half-day of warning.
M = Quality 4 or worse on day or half-day of no warning.
G = Quality 5 or better on day of no warning.
(S) = Quality 5 on day of warning.
S = Quality 6 or better on day of warning.
( ) = Quality or forecast 4 or worse (disturbed)

Geomagnetic K_A on the standard scale of 0 to 9, 9 representing the greatest disturbance.

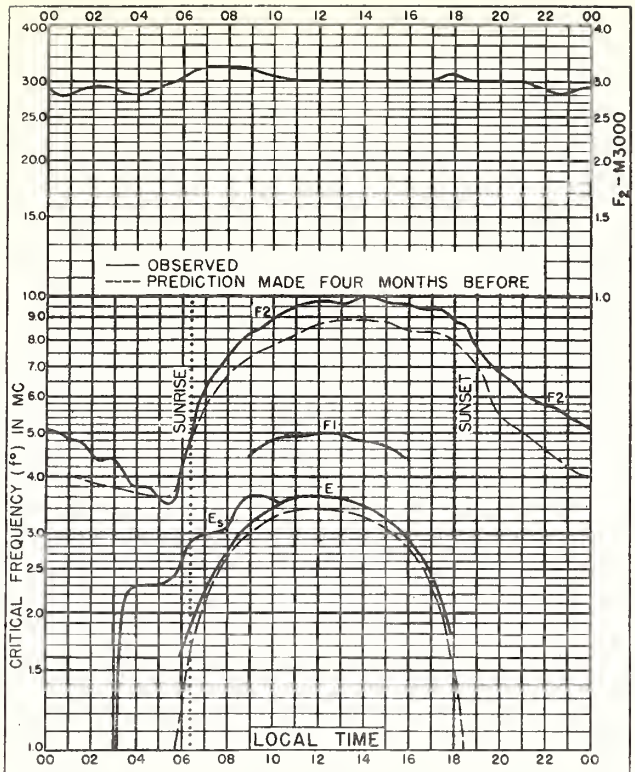


Fig. 1. WASHINGTON, D.C.
39.0°N, 77.5°W MARCH, 1946

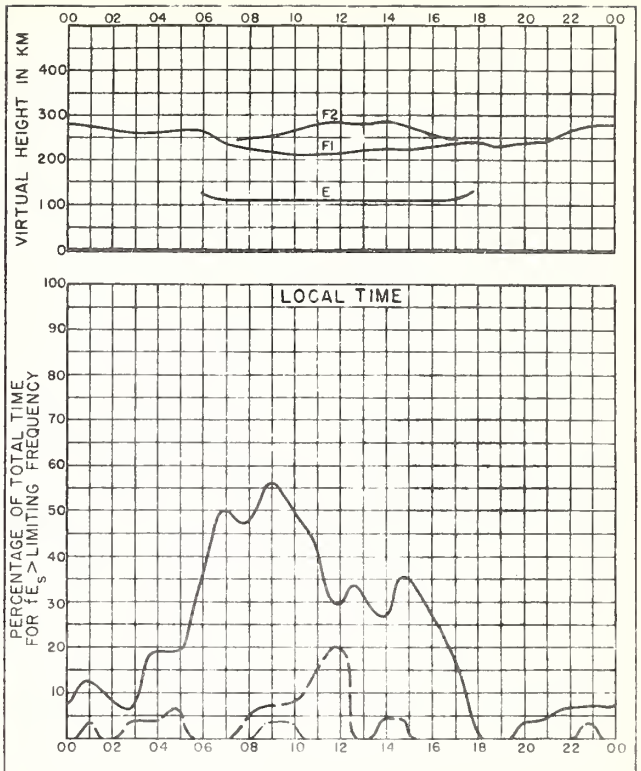


Fig. 2. WASHINGTON, D.C. MARCH, 1946

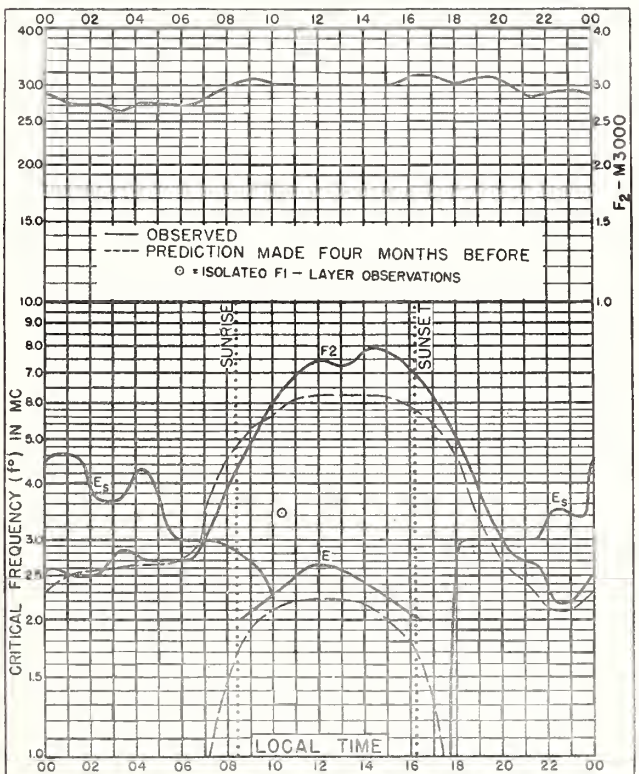


Fig. 3. FAIRBANKS, ALASKA
64.9°N, 147.8°W FEBRUARY, 1946

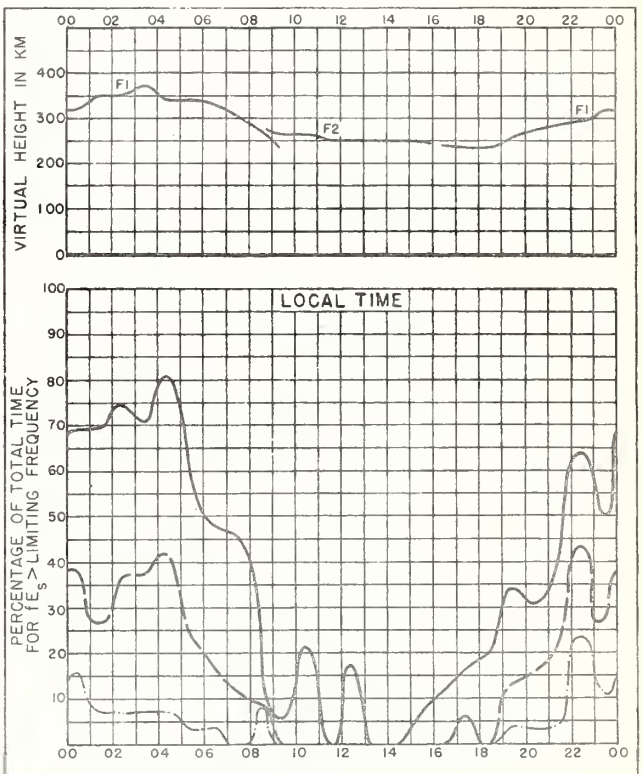


Fig. 4. FAIRBANKS, ALASKA FEBRUARY, 1946

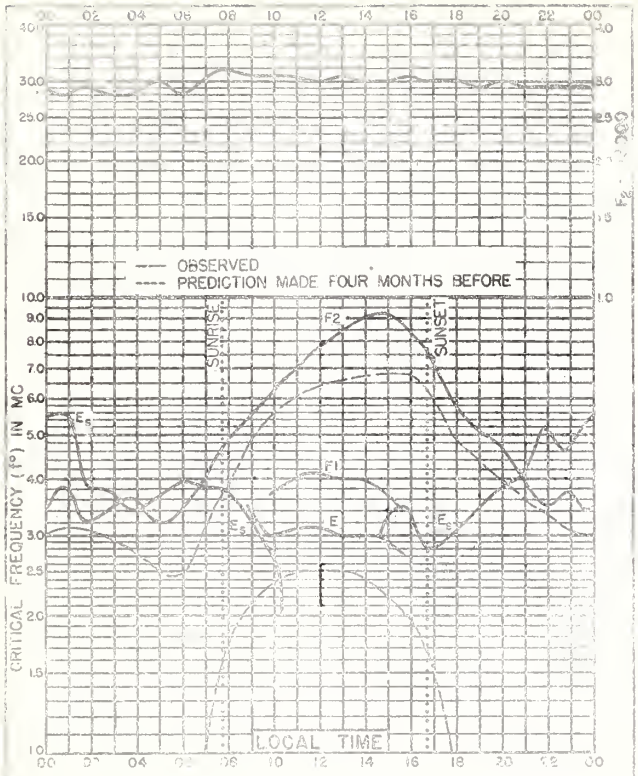


Fig. 5. CHURCHILL, CANADA
58.8°N, 94.2°W FEBRUARY, 1946

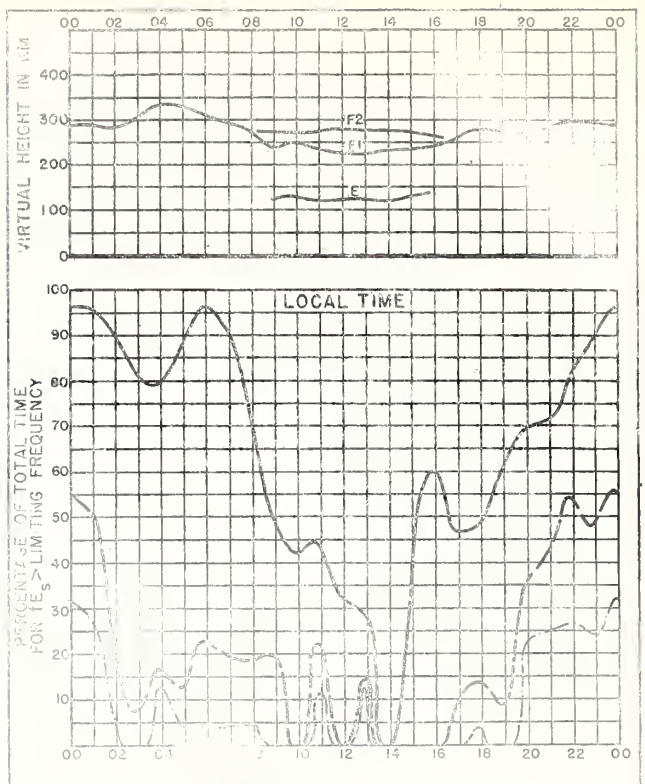


Fig. 6. CHURCHILL, CANADA FEBRUARY, 1946

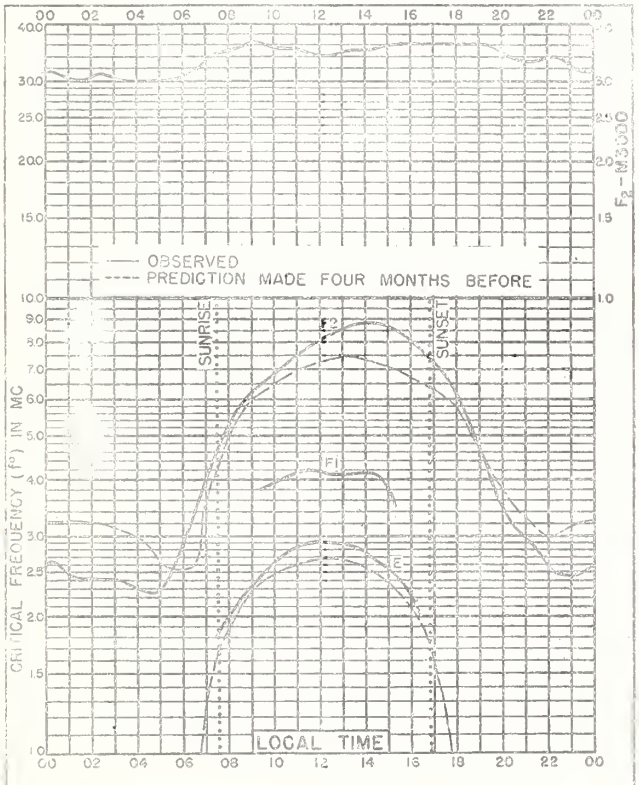


Fig. 7. PRINCE RUPERT, CANADA
54.3°N, 130.3°W FEBRUARY, 1946

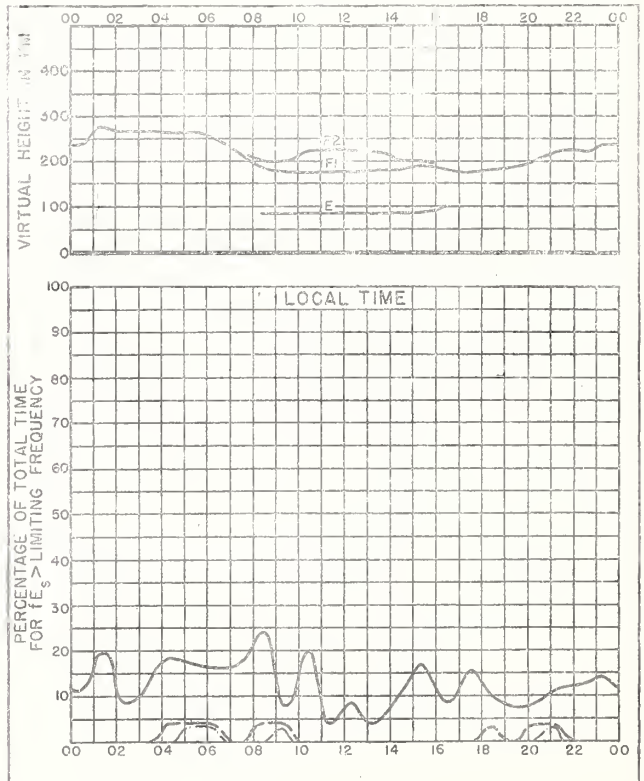


Fig. 8. PRINCE RUPERT, CANADA FEBRUARY, 1946

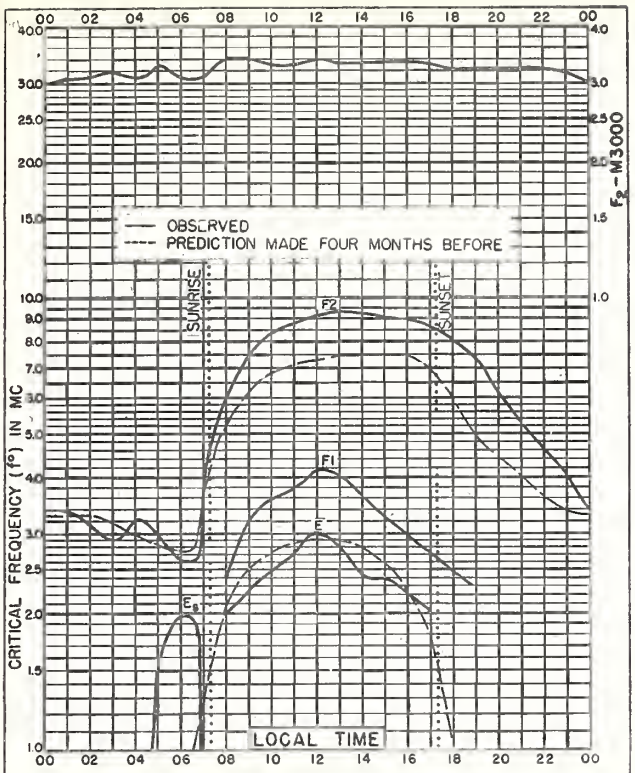


Fig. 9. ST. JOHN'S, NEWFOUNDLAND
47.7°N, 52.7°W FEBRUARY, 1946

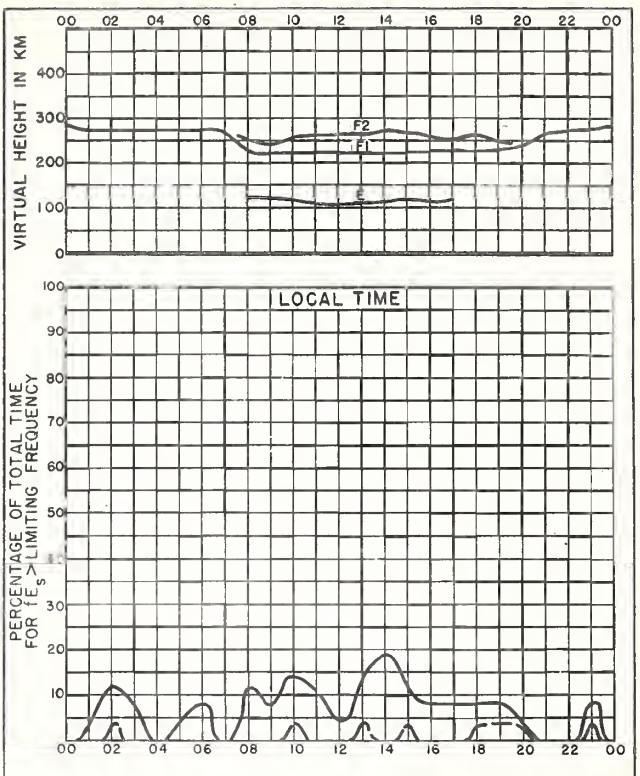


Fig. 10. ST. JOHN'S, NEWFOUNDLAND FEBRUARY, 1946

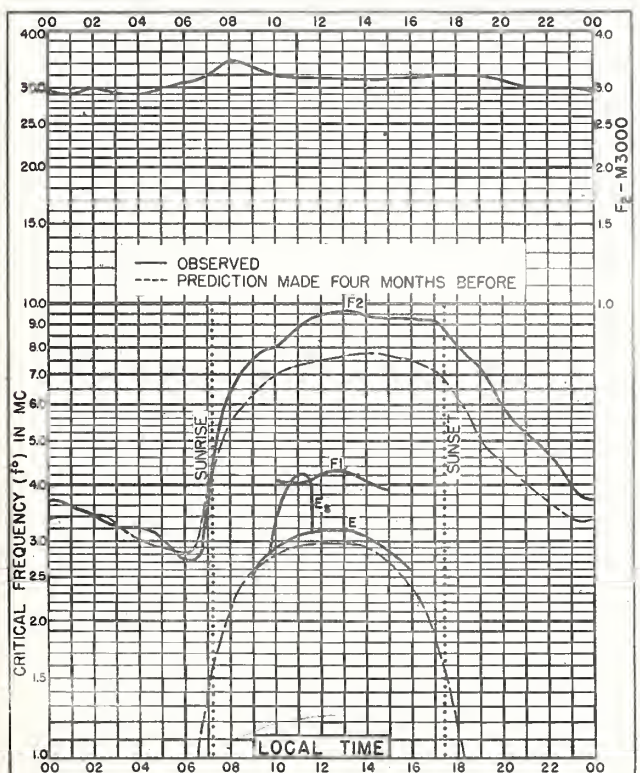


Fig. 11. OTTAWA, CANADA
45.5°N, 75.8°W FEBRUARY, 1946

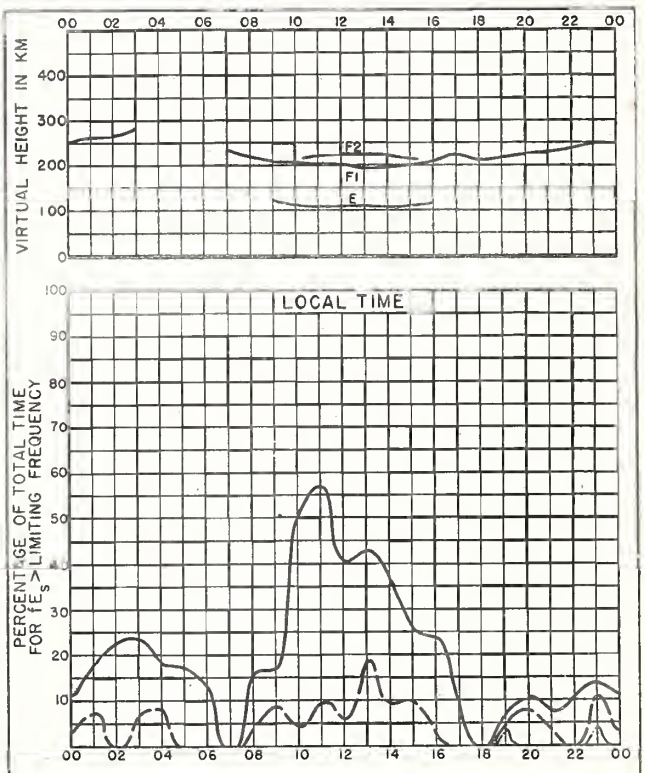


Fig. 12. OTTAWA, CANADA FEBRUARY, 1946

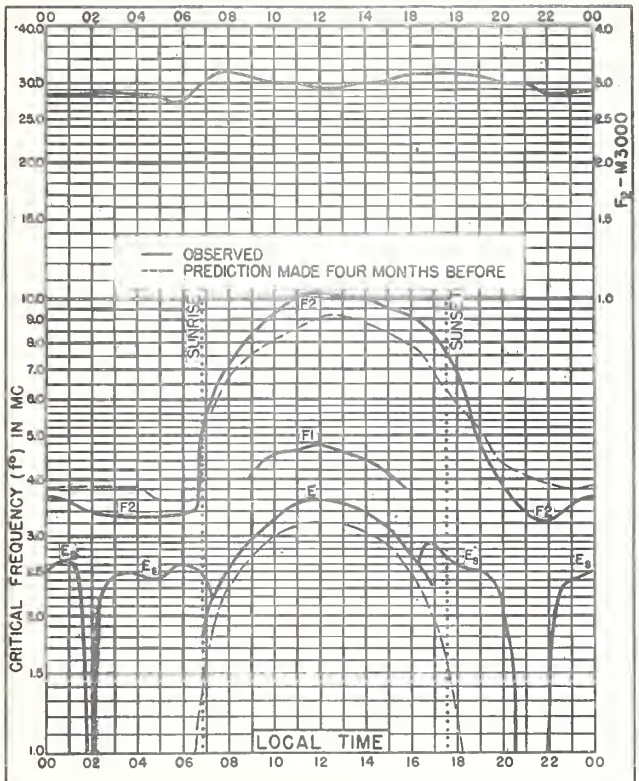


Fig. 13. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W FEBRUARY, 1946

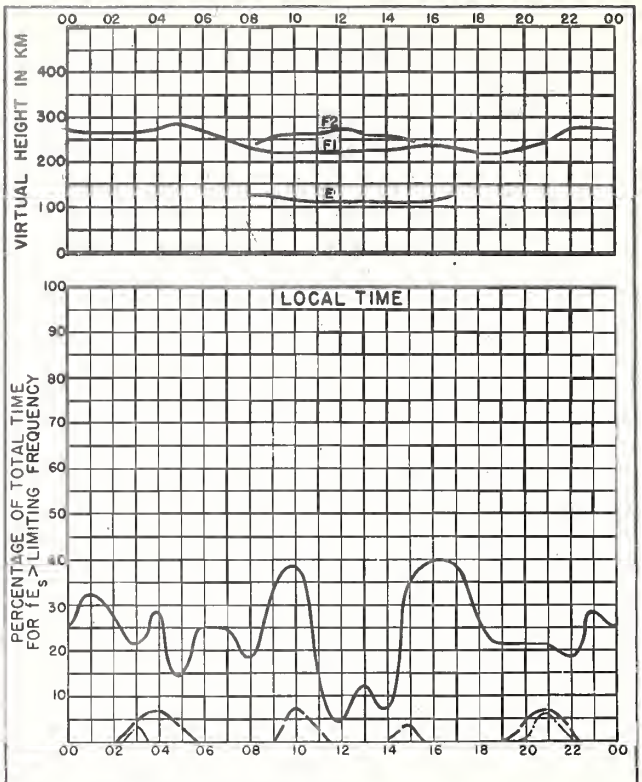


Fig. 14. SAN FRANCISCO, CALIFORNIA FEBRUARY, 1946

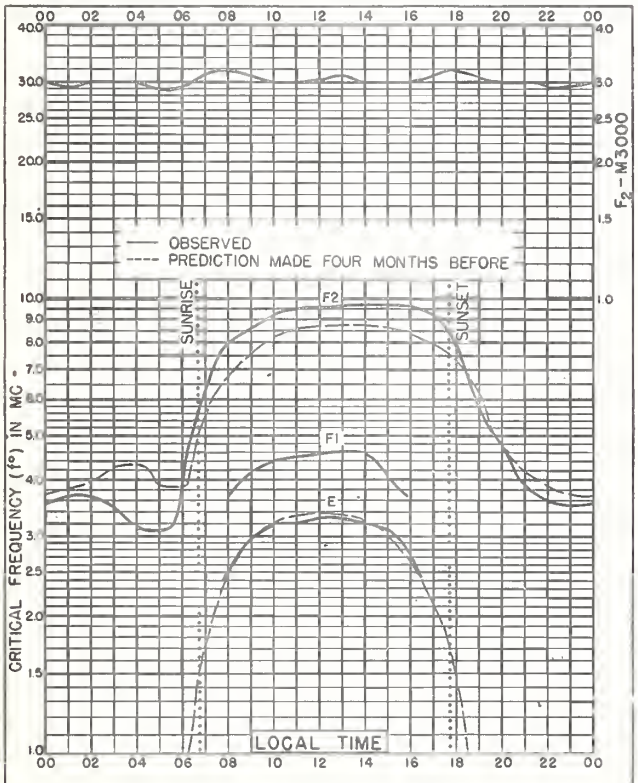


Fig. 15. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W FEBRUARY, 1946

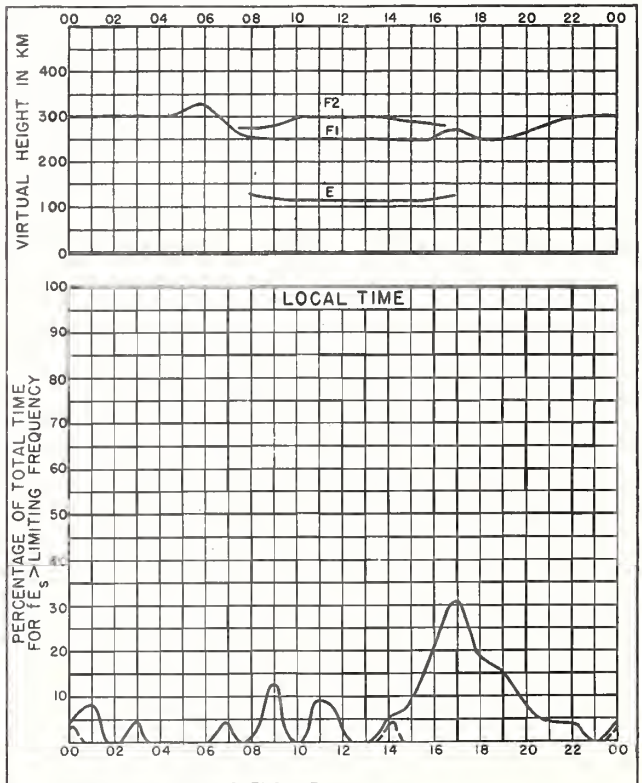


Fig. 16. BATON, ROUGE, LOUISIANA FEBRUARY, 1946

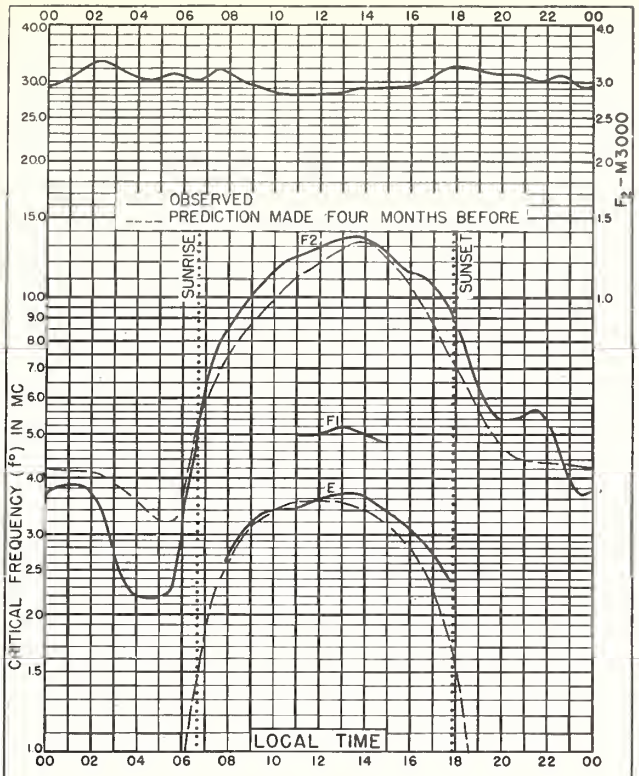


Fig. 17. MAUI, HAWAII
20.8°N, 156.5°W FEBRUARY, 1946

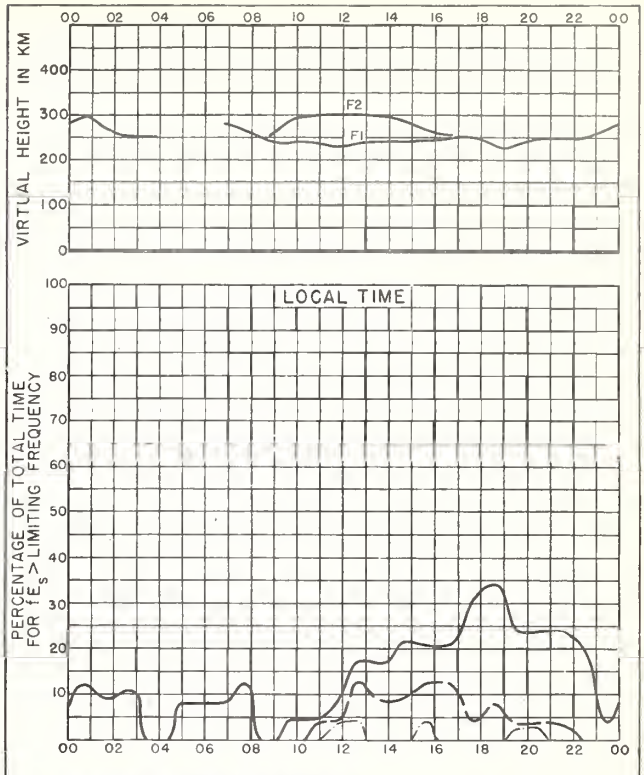


Fig. 18. MAUI, HAWAII FEBRUARY, 1946

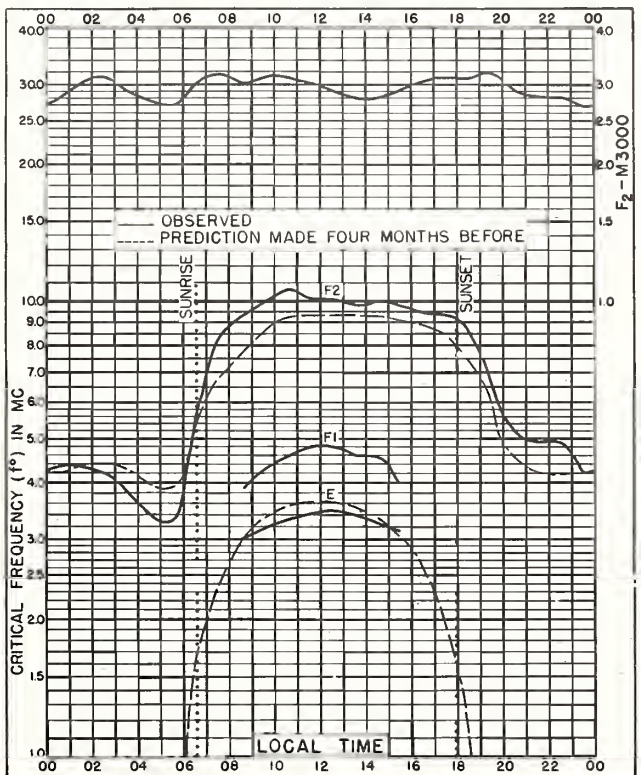


Fig. 19. SAN JUAN, PUERTO RICO
18.4°N, 66.1°W FEBRUARY, 1946

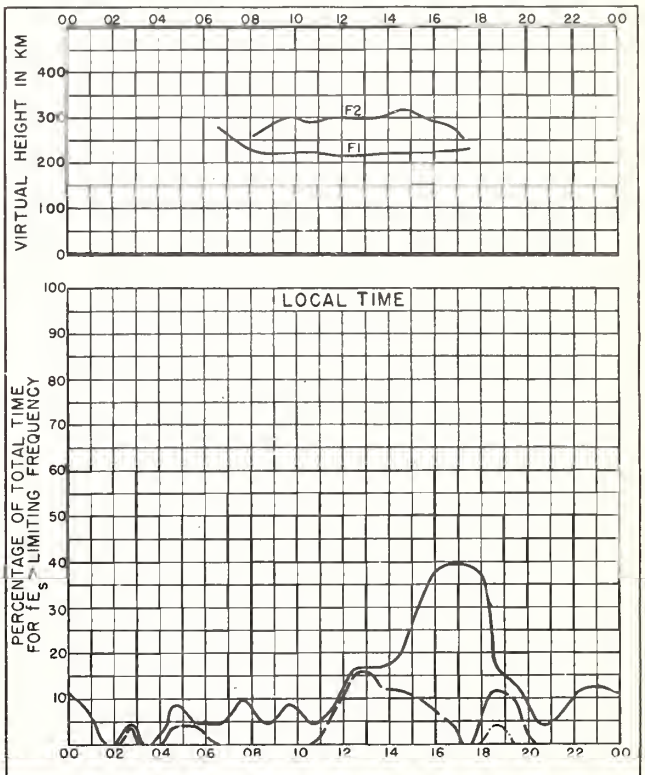


Fig. 20. SAN JUAN, PUERTO RICO FEBRUARY, 1946

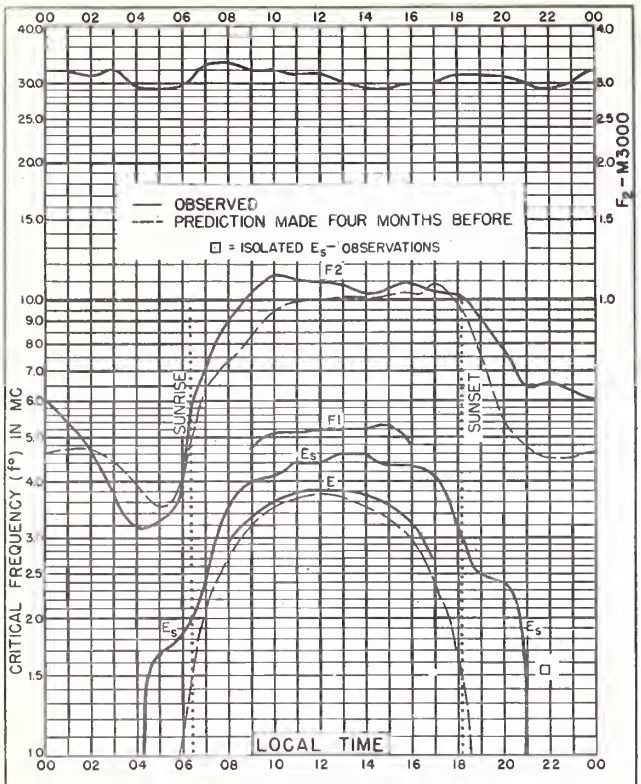


Fig. 21. TRINIDAD, BRIT. WEST INDIES
10.6°N, 61.2°W FEBRUARY, 1946

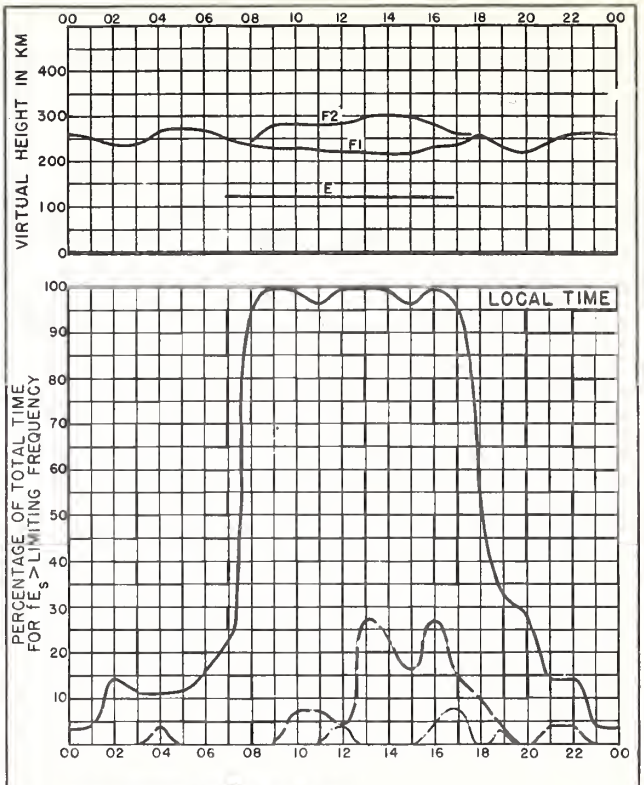


Fig. 22. TRINIDAD, BRIT. WEST INDIES FEBRUARY, 1946

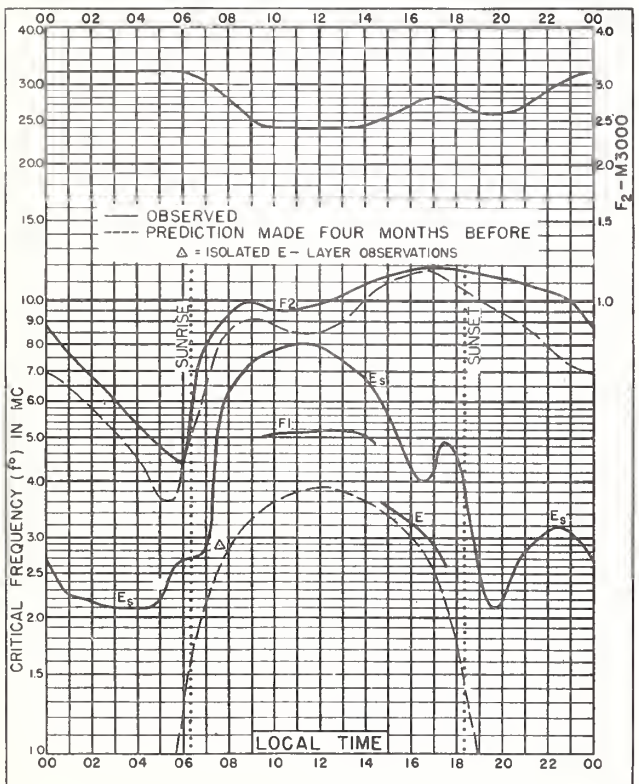


Fig. 23. CHRISTMAS I.
1.9°N, 157.3°W FEBRUARY, 1946

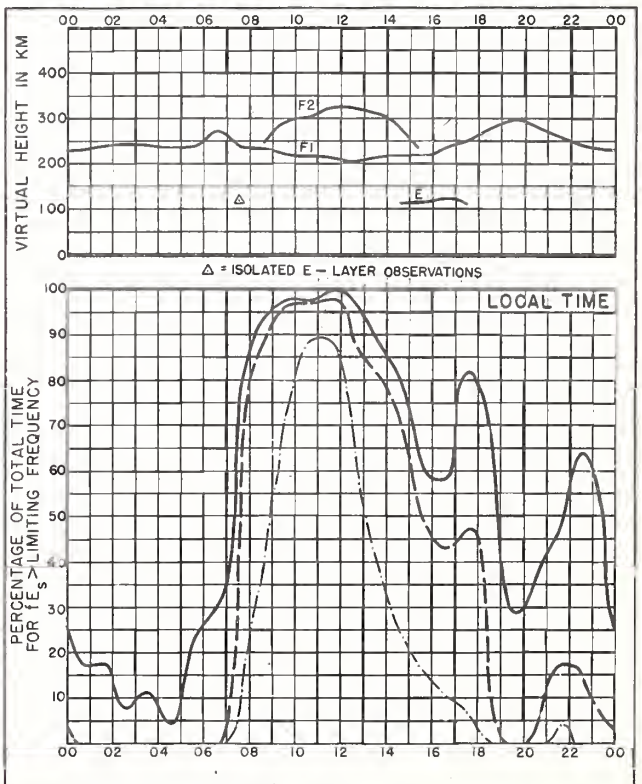


Fig. 24. CHRISTMAS I. FEBRUARY, 1946

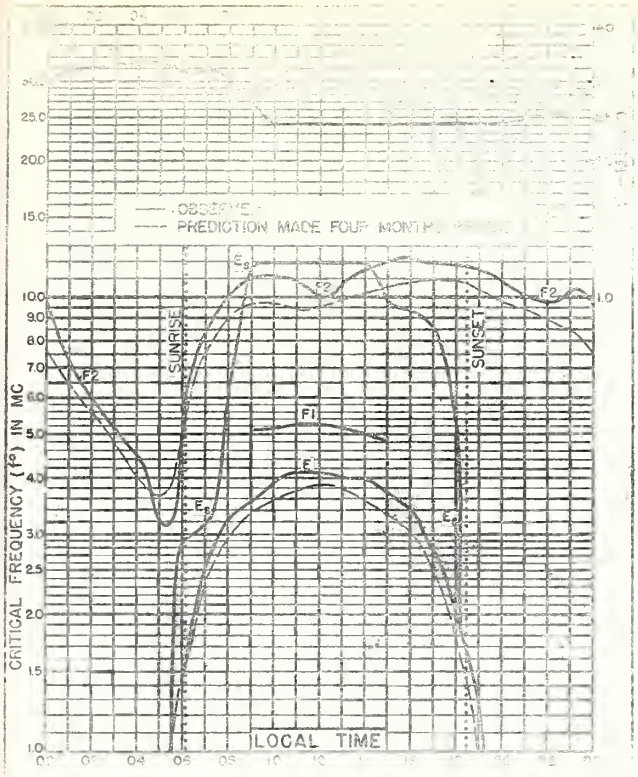


Fig. 25. HUANCAYO, PERU
12.0°S, 75.3°W FEBRUARY, 1946

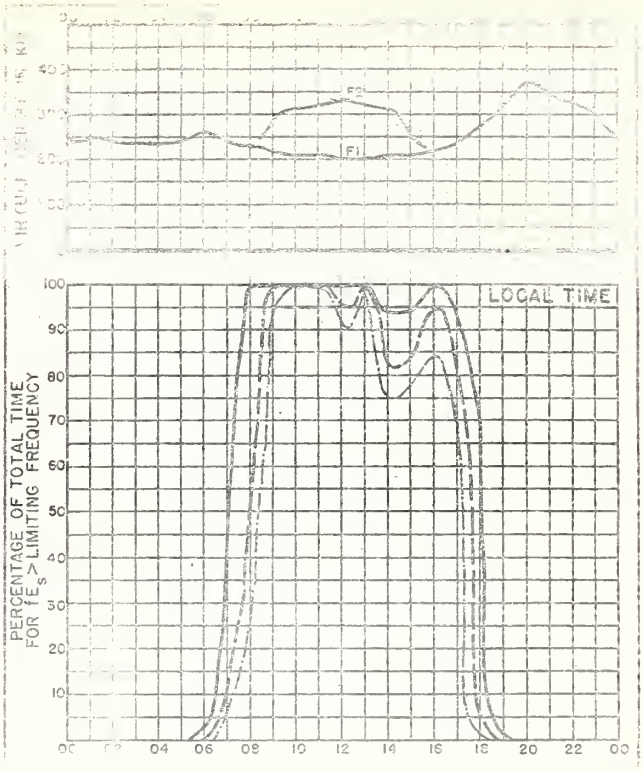


Fig. 26. HUANCAYO, PERU FEBRUARY, 1946

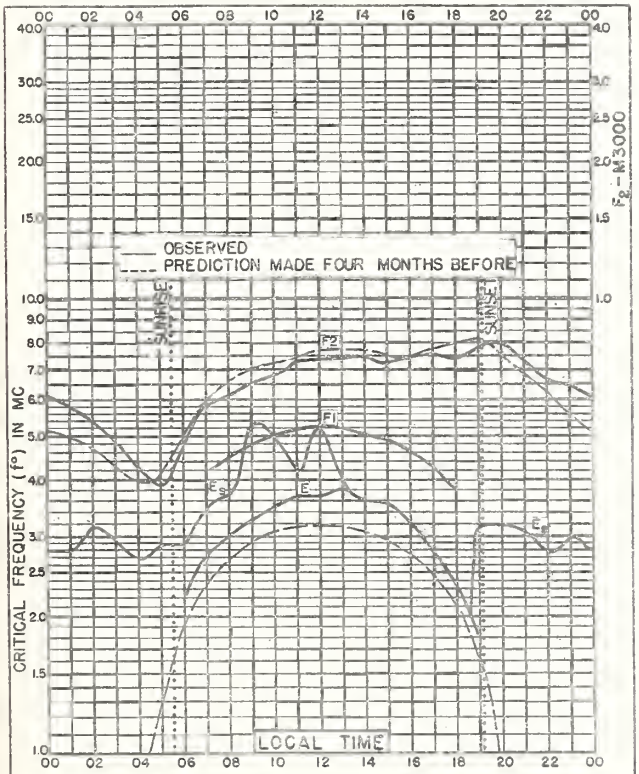


Fig. 27. CHRISTCHURCH, N.Z.
43.5°S, 172.6°E FEBRUARY, 1946

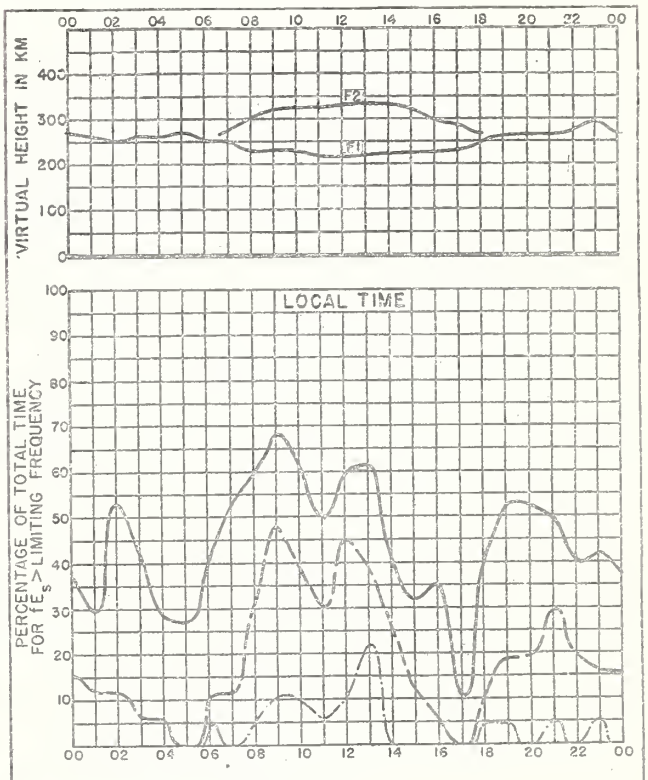


Fig. 28. CHRISTCHURCH, N.Z. FEBRUARY, 1946

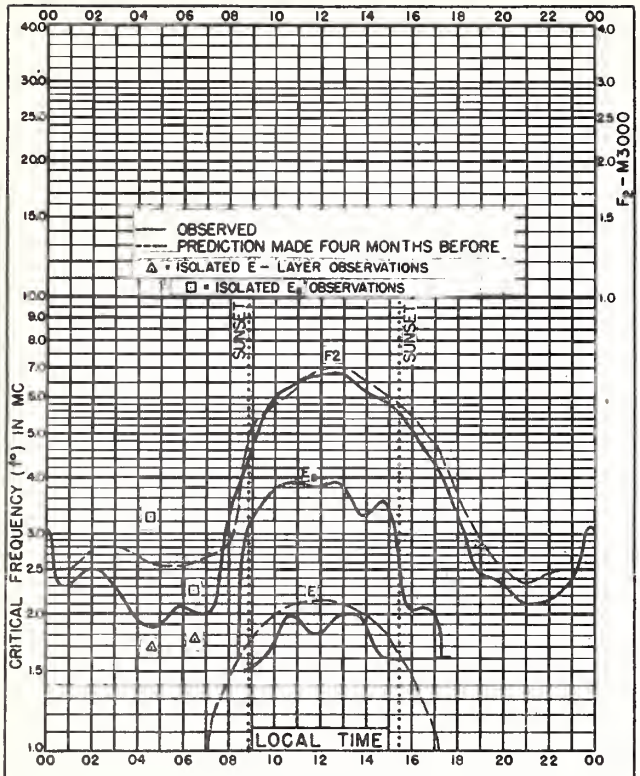


Fig. 29. OSLO, NORWAY
59.9°N, 11.0°E JANUARY, 1946

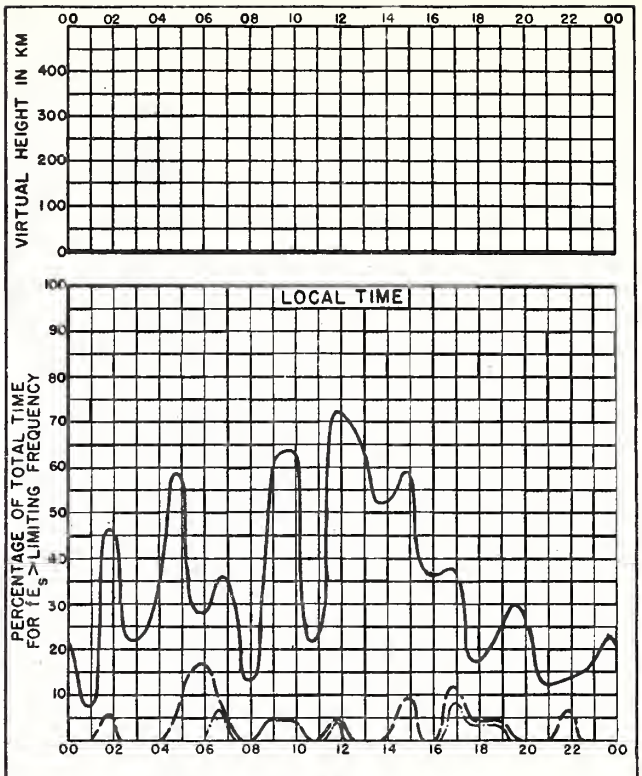


Fig. 30. OSLO, NORWAY JANUARY, 1946

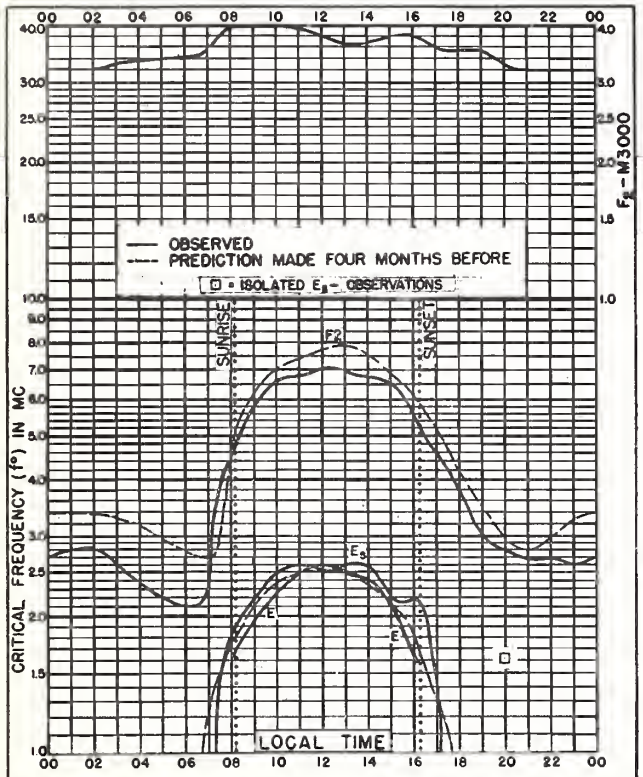


Fig. 31. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E JANUARY, 1946

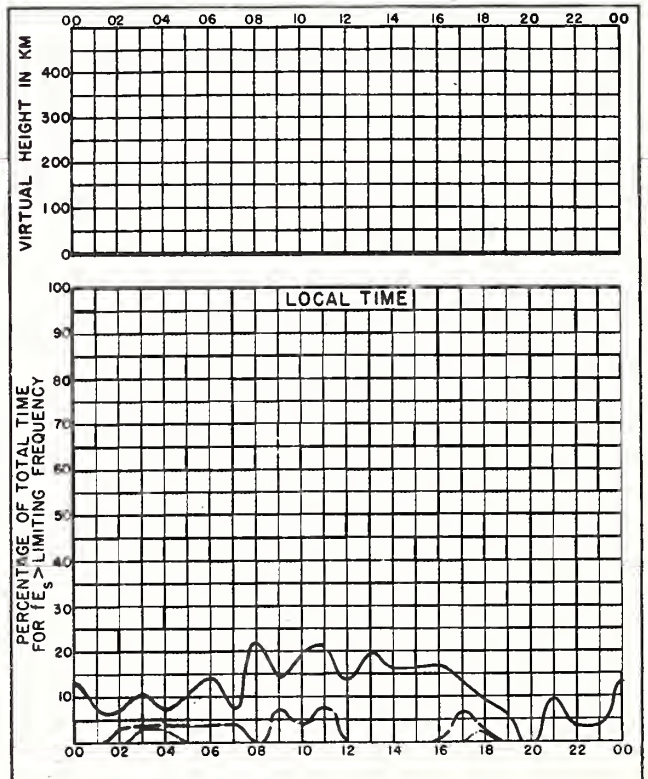


Fig. 32. GREAT BADDOW, ENGLAND JANUARY, 1946

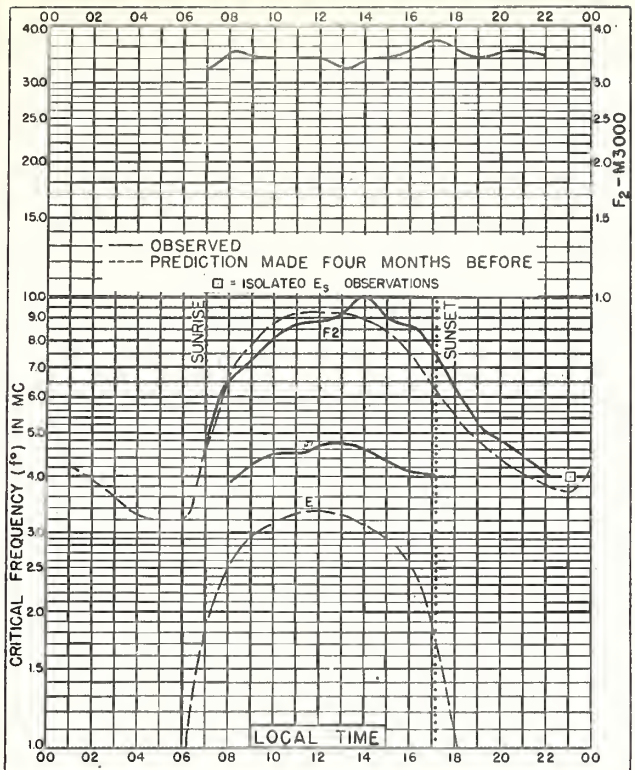


Fig. 33. CHUNGKING, CHINA
29.4°N, 106.8°E JANUARY, 1946

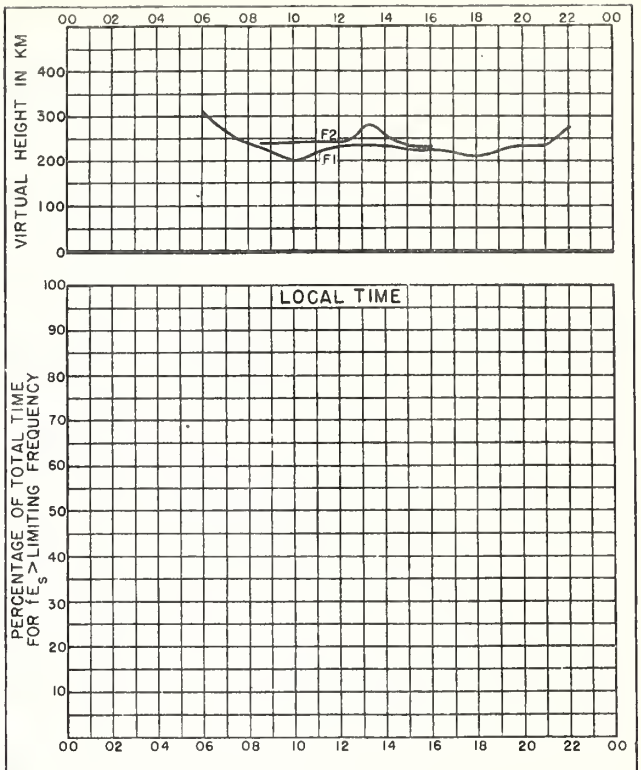


Fig. 34. CHUNGKING, CHINA JANUARY, 1946

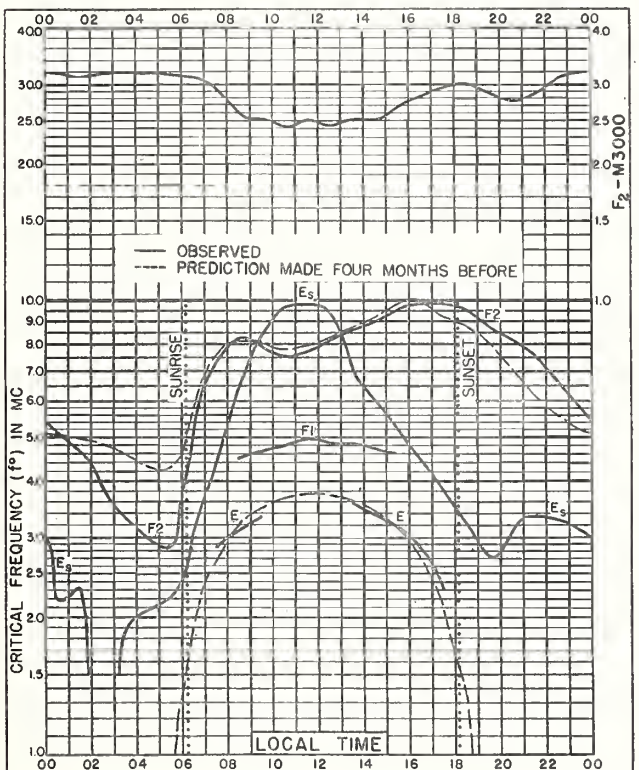


Fig. 35. CHRISTMAS I.
1.9°N, 157.3°W JANUARY, 1946

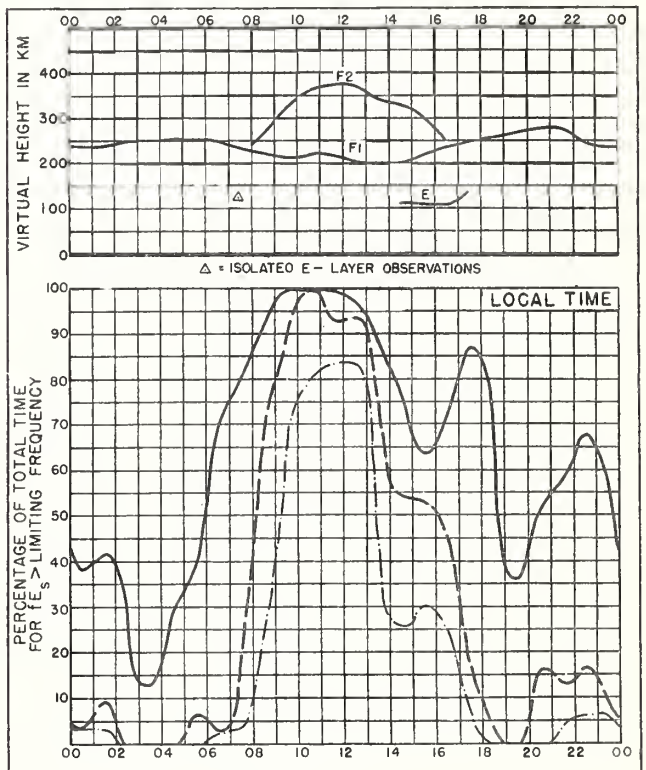


Fig. 36. CHRISTMAS I. JANUARY, 1946

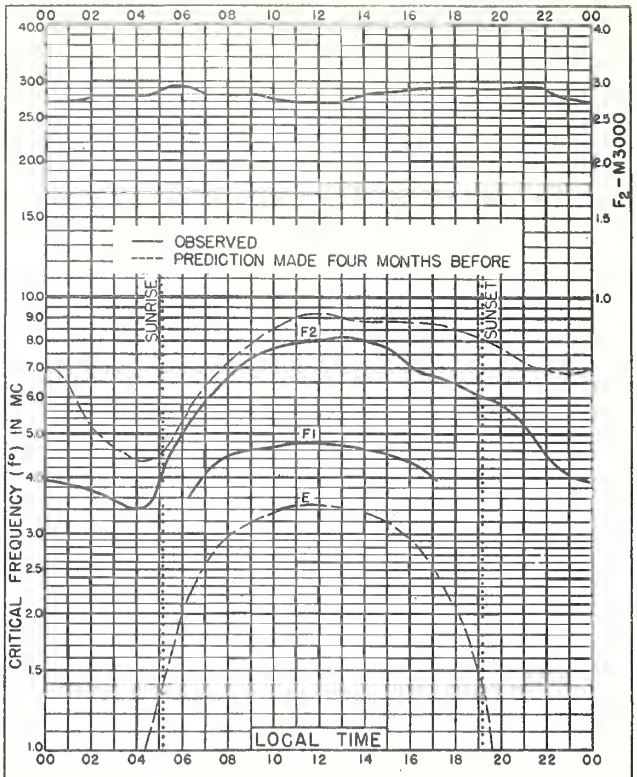


Fig. 37. CAPETOWN (SIMONSTOWN), UNION OF S. AFRICA
33.9°S, 18.7°E JANUARY, 1946

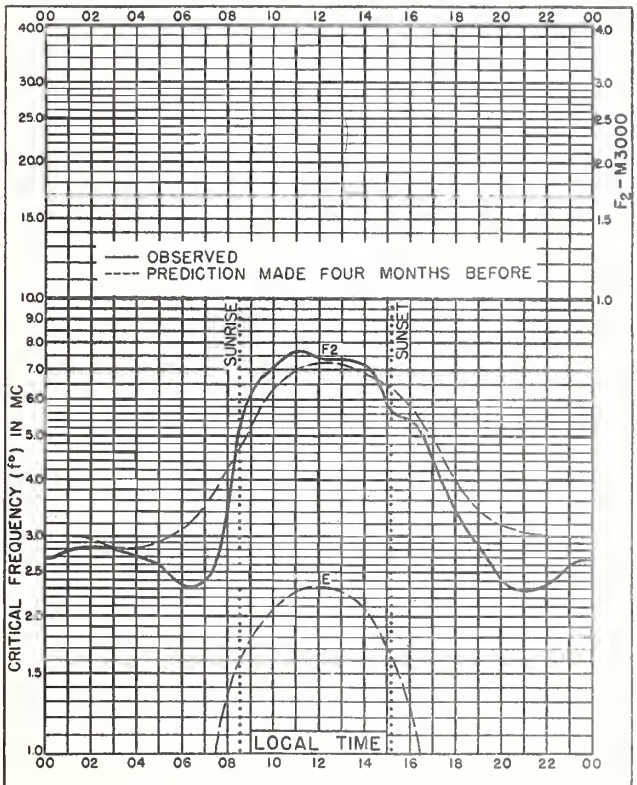


Fig. 38. SVERDLOVSK, U.S.S.R.
56.7°N, 61.1°E DECEMBER, 1945

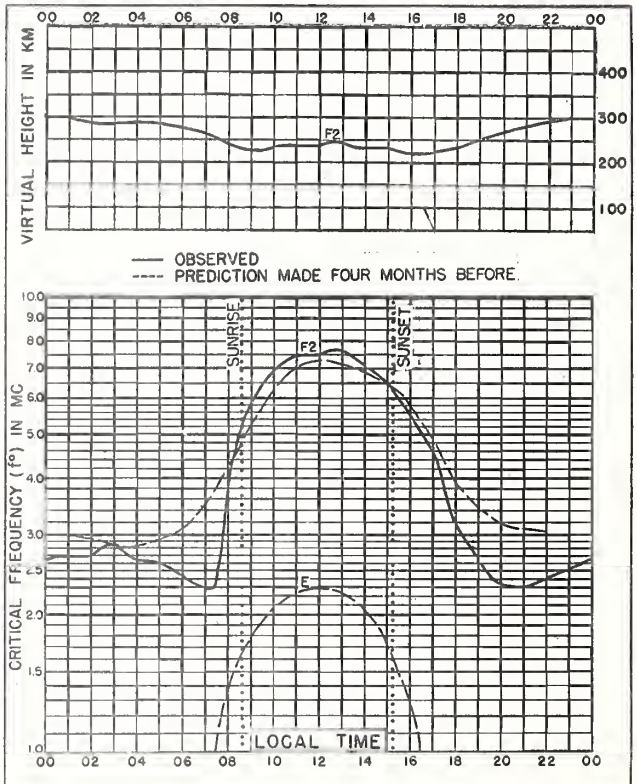


Fig. 39. TOMSK, U.S.S.R.
56.4°N, 85.0°E DECEMBER, 1945

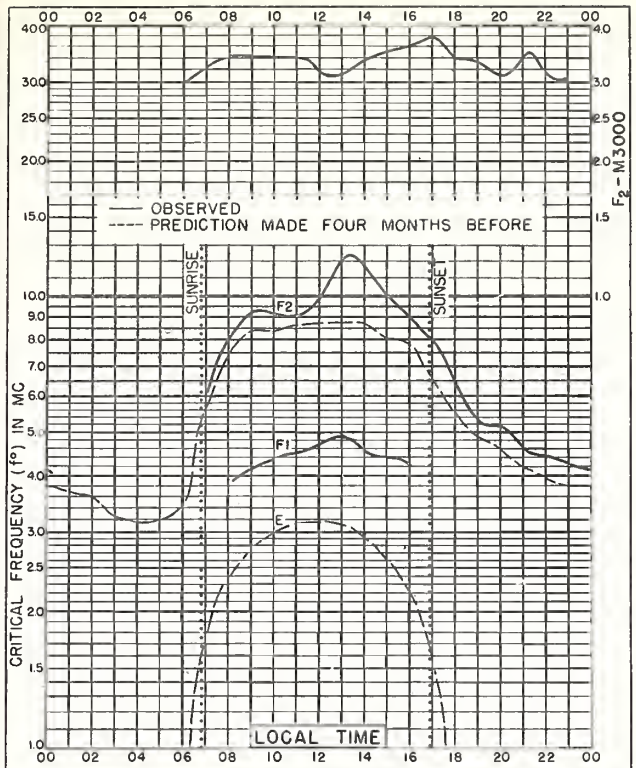


Fig. 40. CHUNGKING, CHINA
29.4°N, 106.8°E DECEMBER, 1945

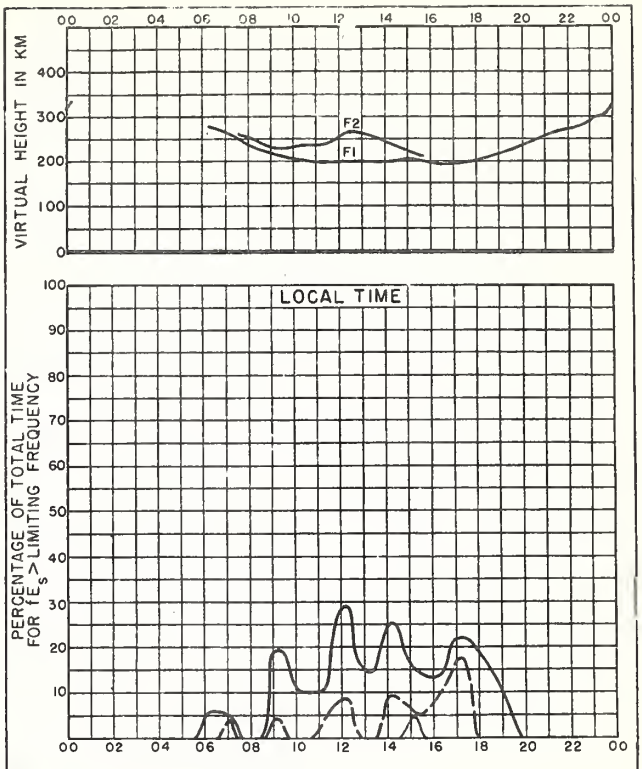


Fig. 41. CHUNGKING, CHINA DECEMBER, 1945

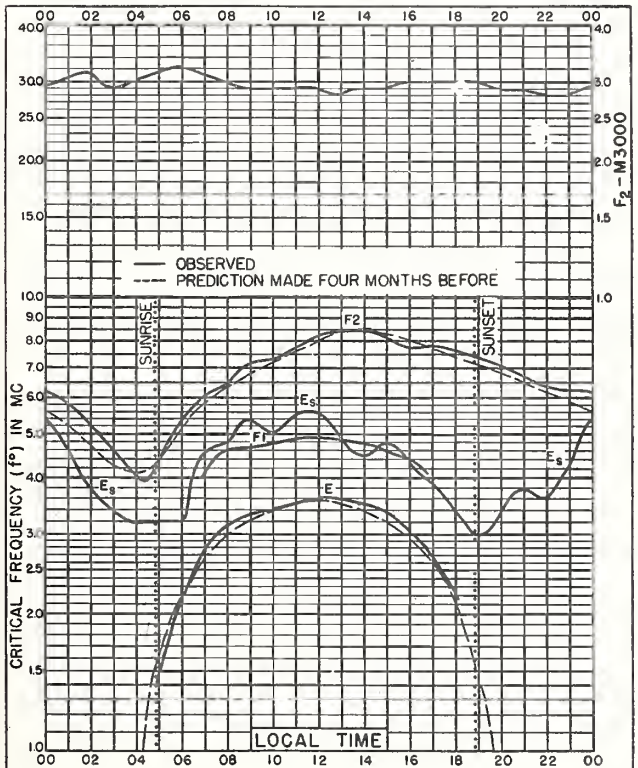


Fig. 42. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E DECEMBER, 1945

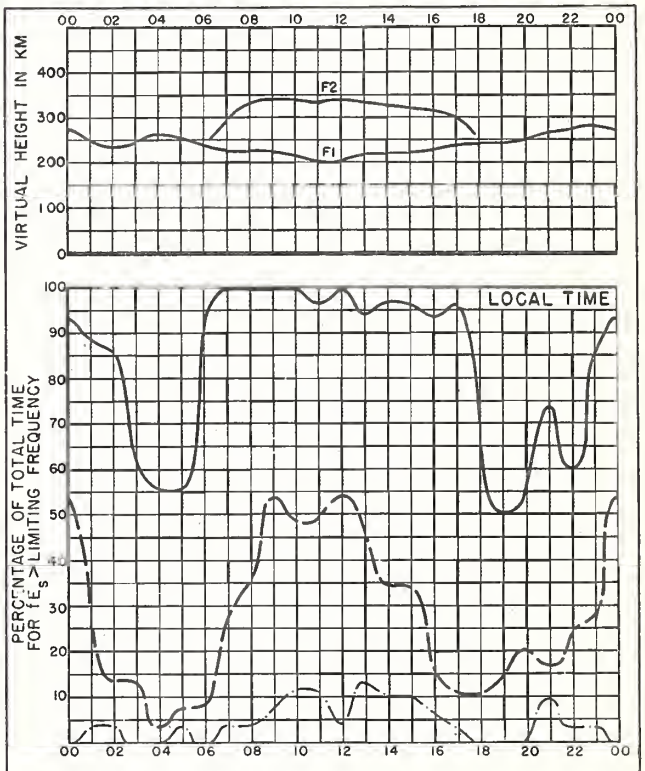


Fig. 43. WATHEROO, W. AUSTRALIA DECEMBER, 1945

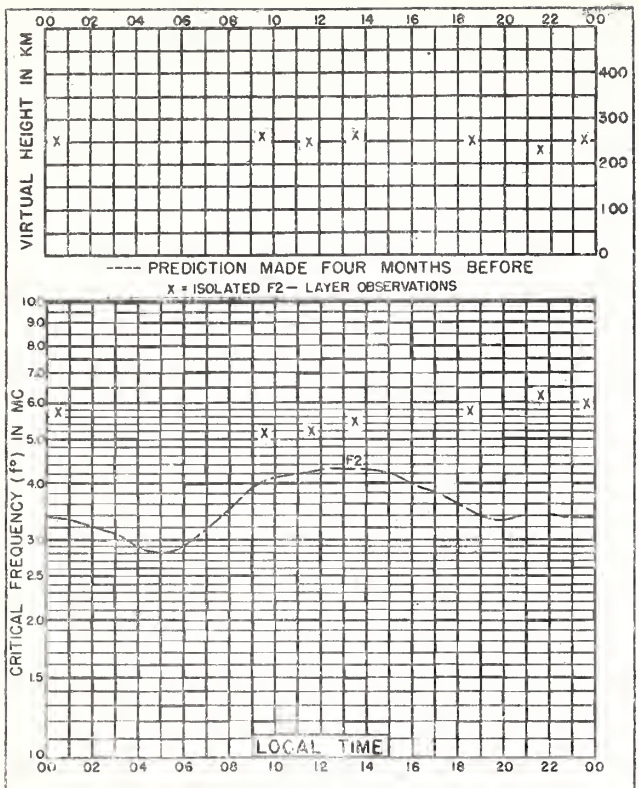


Fig. 44. BUKHTA TIKHAYA
80.3°N, 52.7°E NOVEMBER, 1945

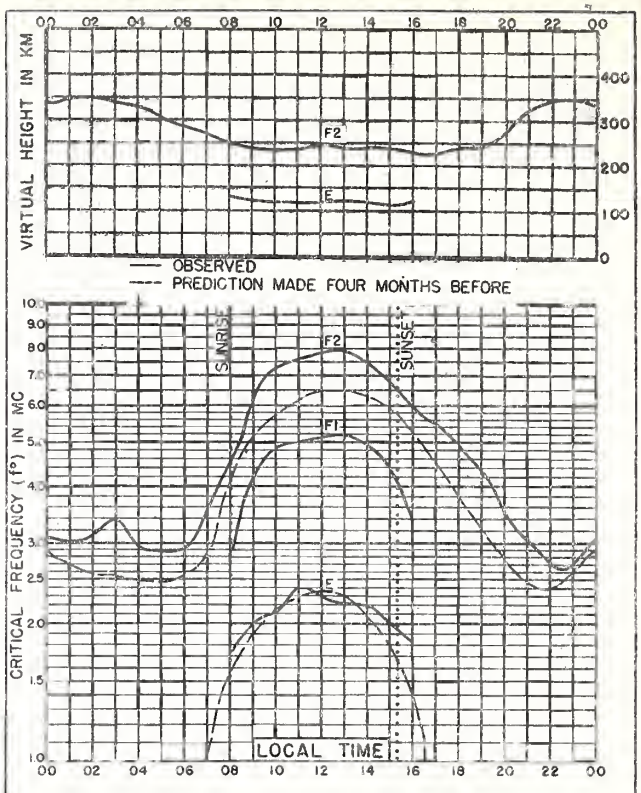


Fig. 45. LENINGRAD (WETKAS), U.S.S.R.
60.0°N, 30.3°E NOVEMBER, 1945

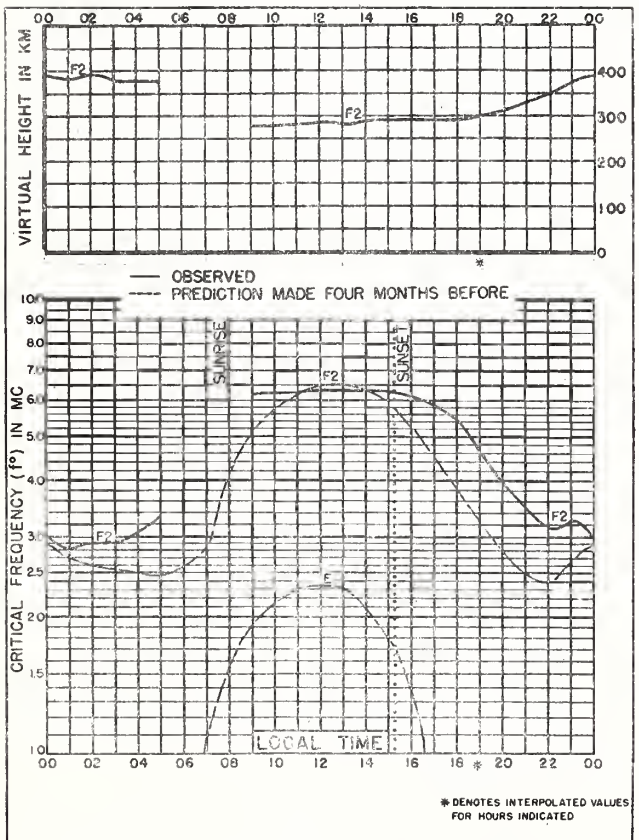


Fig. 46. LENINGRAD (LDRS), U.S.S.R.
59.9°N, 30.3°E NOVEMBER, 1945

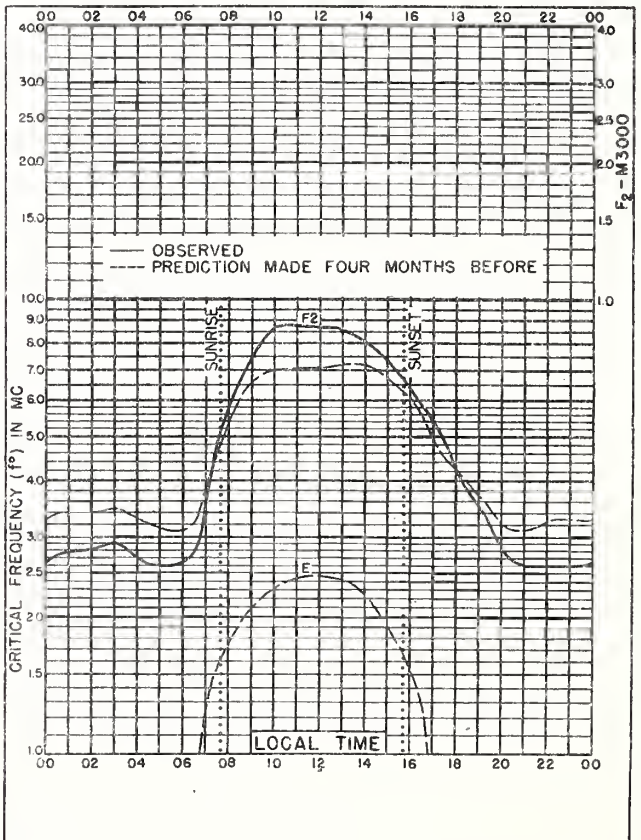


Fig. 47. SVERDLOVSK, U.S.S.R.
56.7°N, 61.1E NOVEMBER, 1945

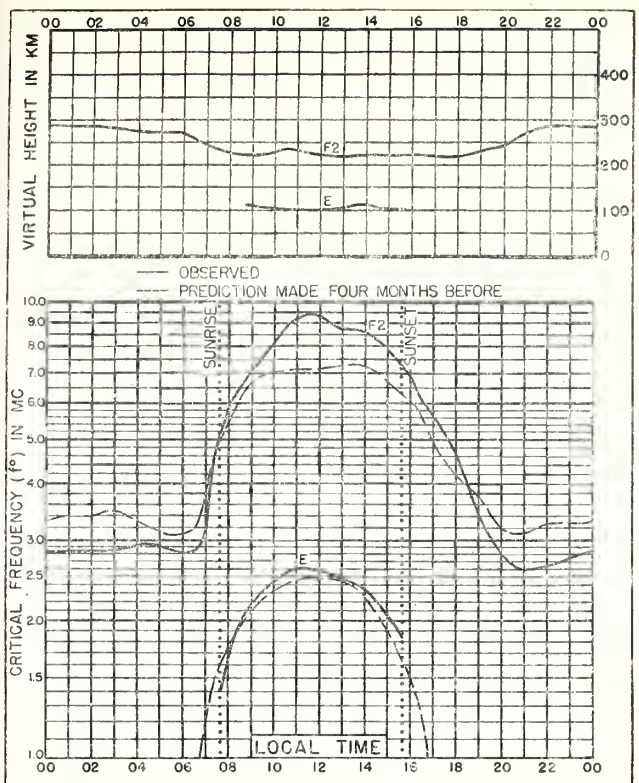


Fig. 48. TOMSK, U.S.S.R.
56.4°N, 85.0°E NOVEMBER, 1945

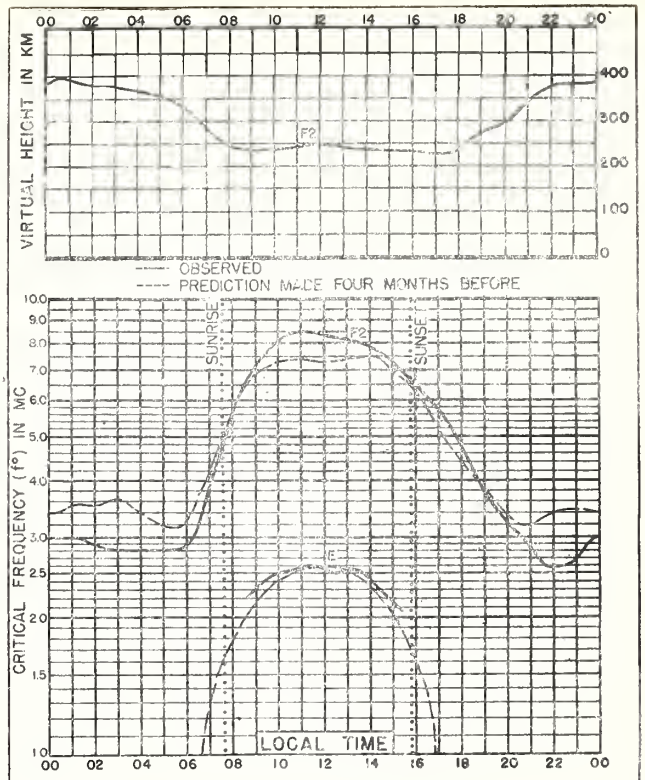


Fig. 49. MOSCOW, U.S.S.R.
55.9°N, 37.3°E NOVEMBER, 1945

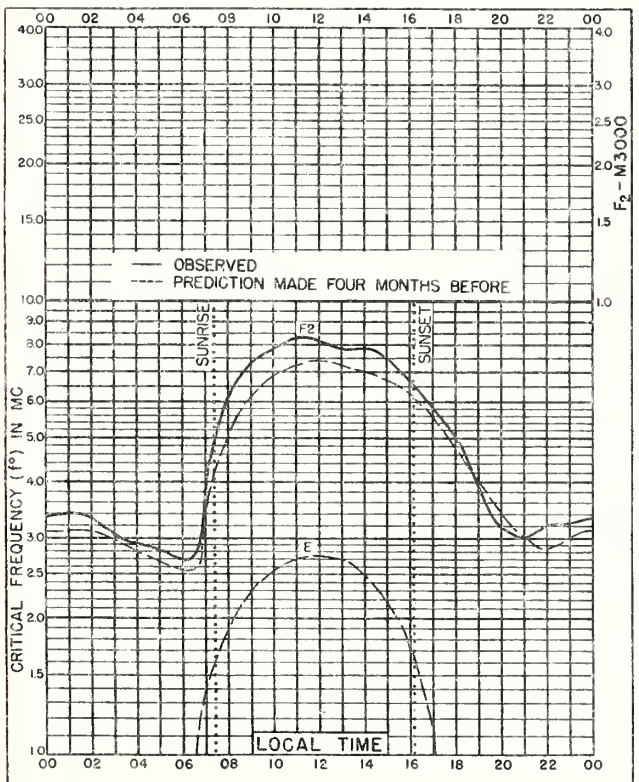


Fig. 50. SLOUGH, ENGLAND
51.5°N, 0.6°W NOVEMBER, 1945

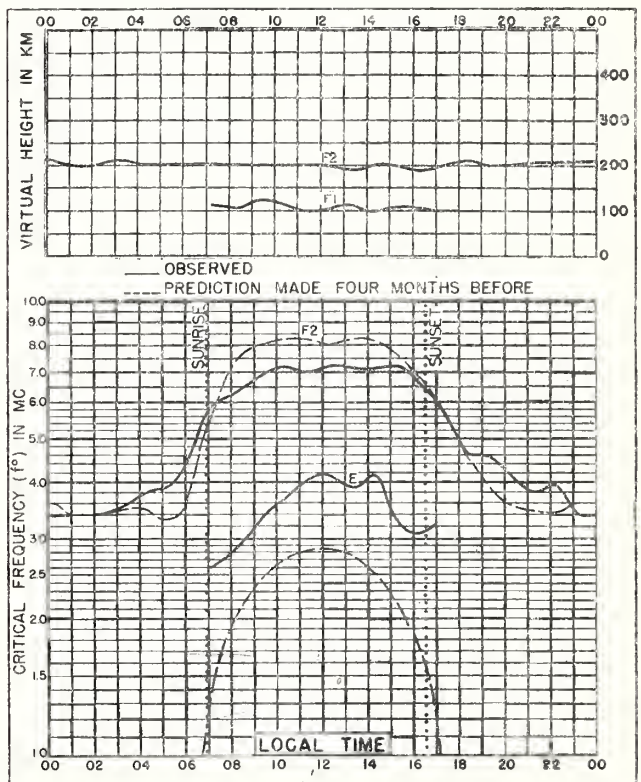


Fig. 51. ALMA ATA, U.S.S.R.
43.5°N, 76.5°E NOVEMBER, 1945

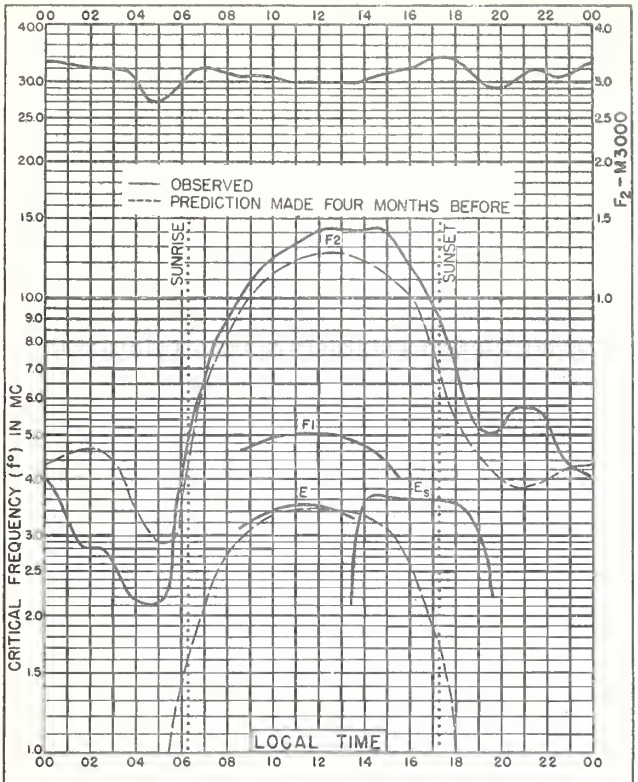


Fig. 52. MAUI, HAWAII
20.8°N, 156.5°W NOVEMBER, 1945

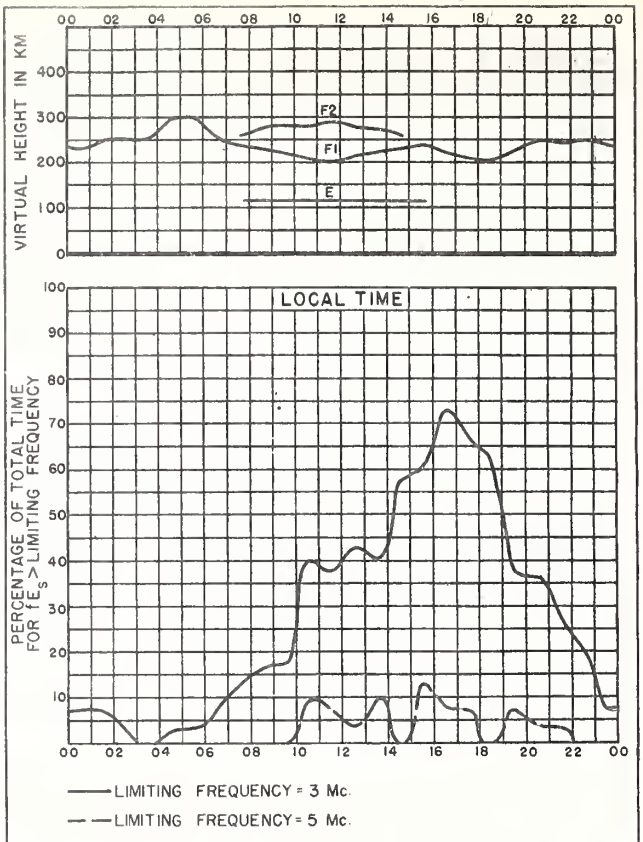


Fig. 53. MAUI, HAWAII NOVEMBER, 1945

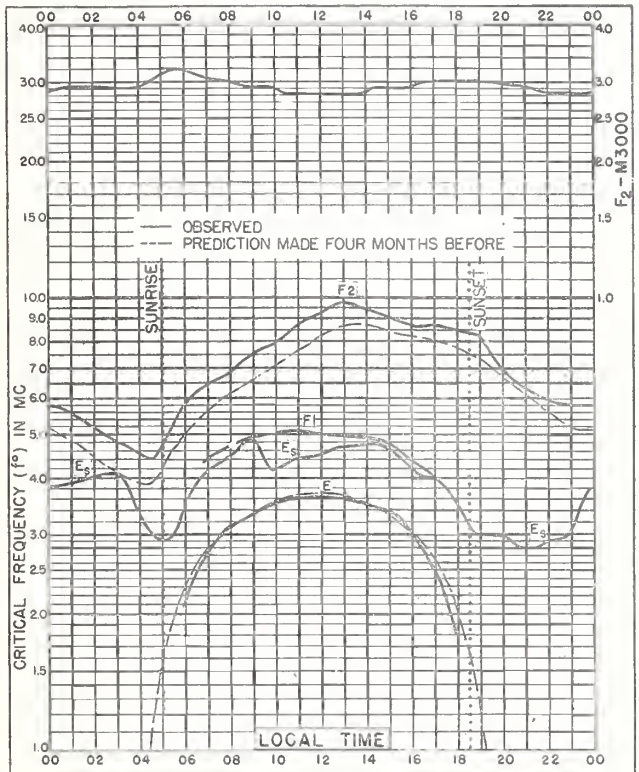


Fig. 54. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E NOVEMBER, 1945

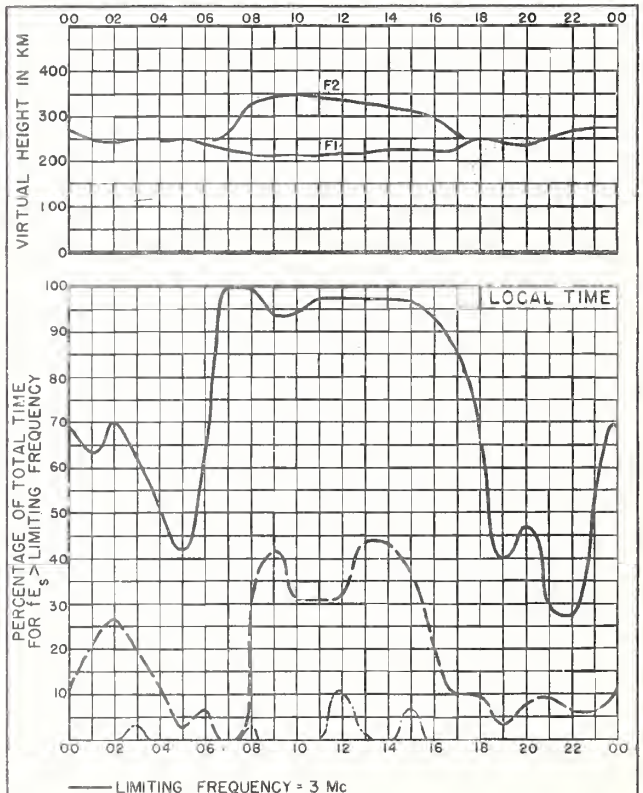


Fig. 55. WATHEROO, W. AUSTRALIA NOVEMBER, 1945

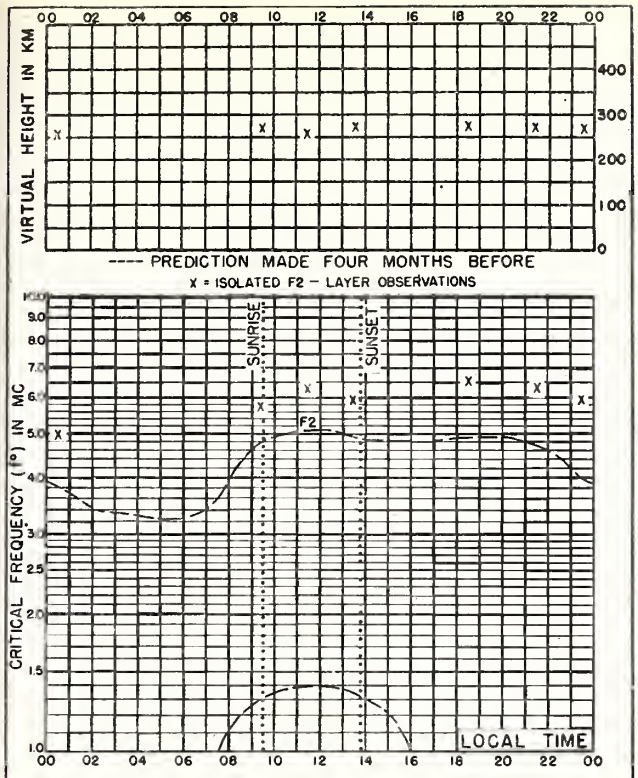


Fig. 56. BUKHTA TIKHAYA
80.3°N, 52.7°E OCTOBER, 1945

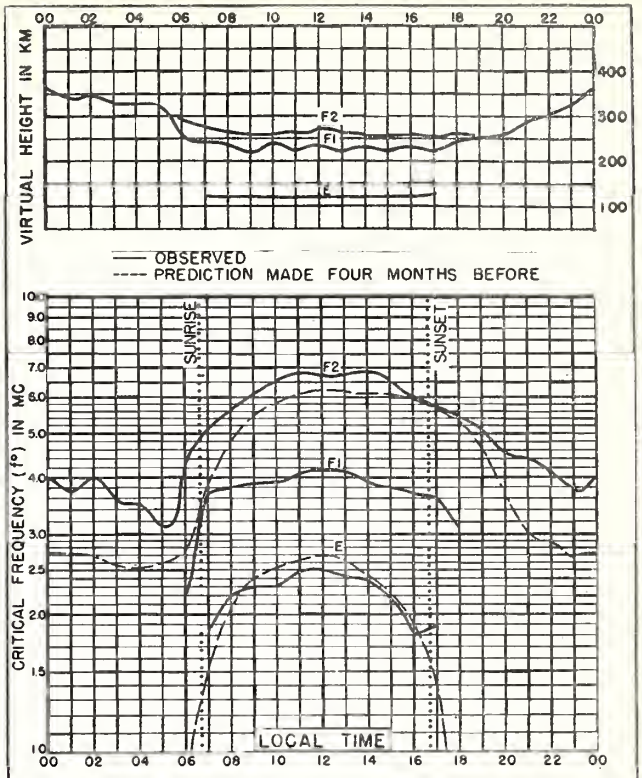


Fig. 57. LENINGRAD (WETKAS), U.S.S.R.
60.0°N, 30.3°E OCTOBER, 1945

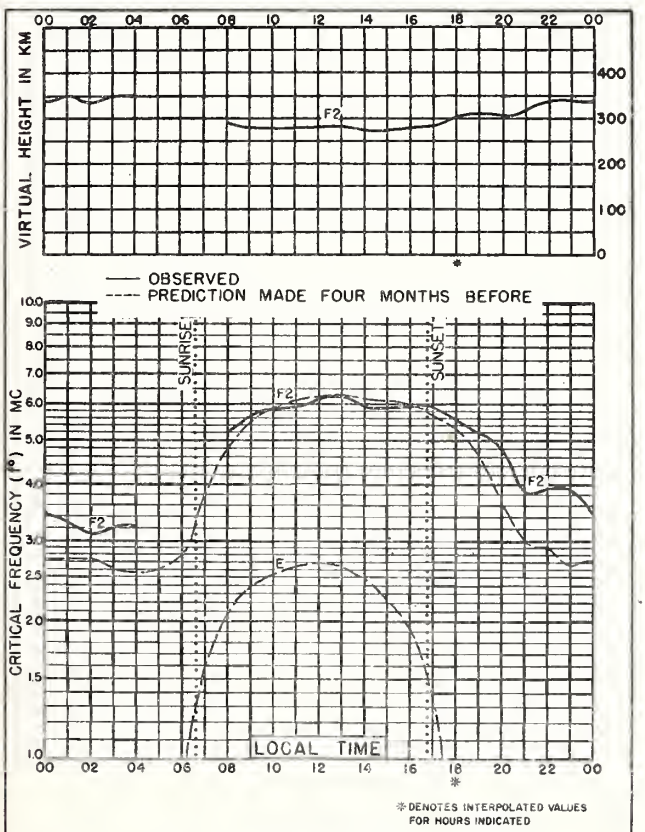


Fig. 58. LENINGRAD (LDRS), U.S.S.R.
59.9°N, 30.3°E OCTOBER, 1945

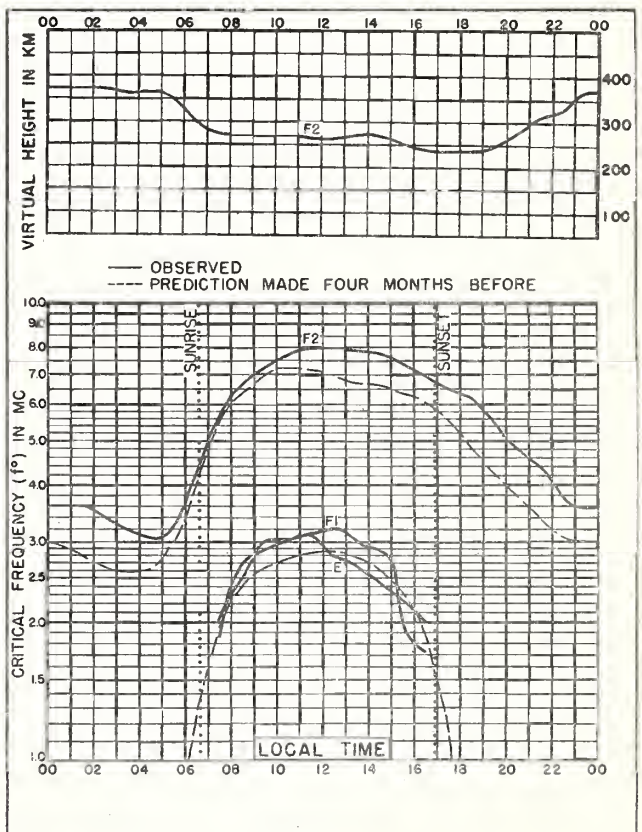


Fig. 59. MOSCOW, U.S.S.R.
55.9°N, 37.3°E OCTOBER, 1945

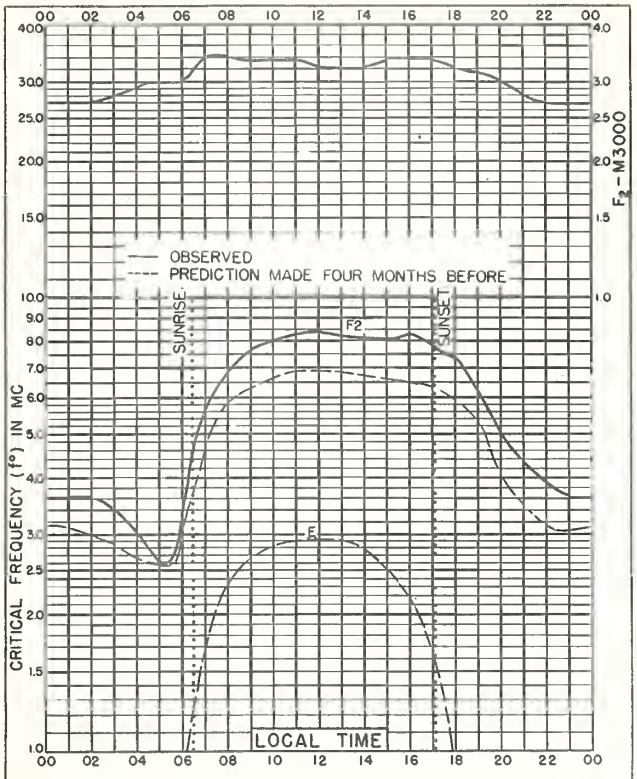


Fig. 60. SLOUGH, ENGLAND
51.5°N, 0.6°W OCTOBER, 1945

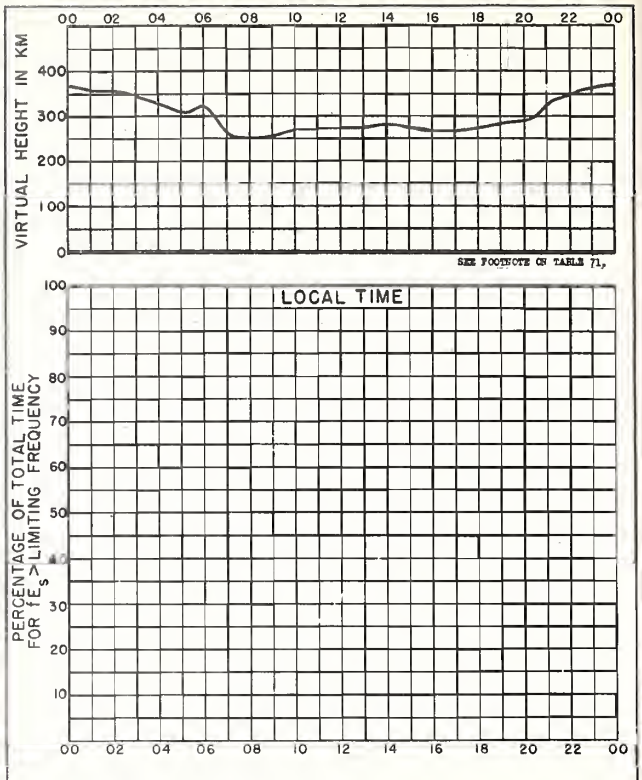


Fig. 61. SLOUGH, ENGLAND OCTOBER, 1945

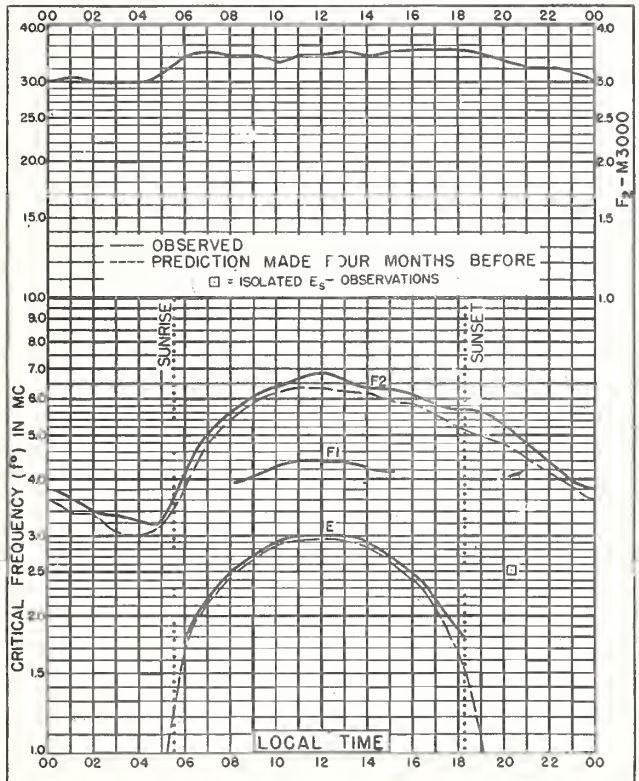


Fig. 62. SVERDLOVSK, U.S.S.R.
56.7°N, 61.1°E SEPTEMBER, 1945

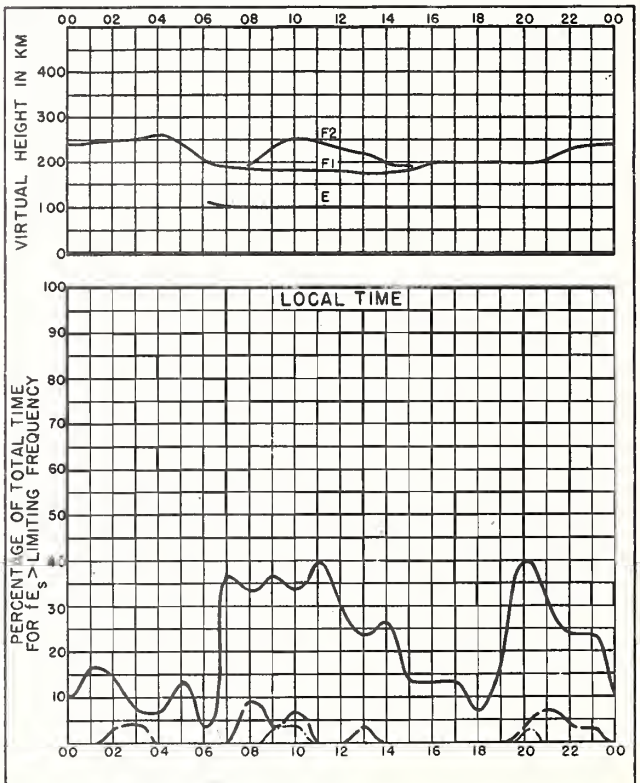


Fig. 63. SVERDLOVSK, U.S.S.R. SEPTEMBER, 1945

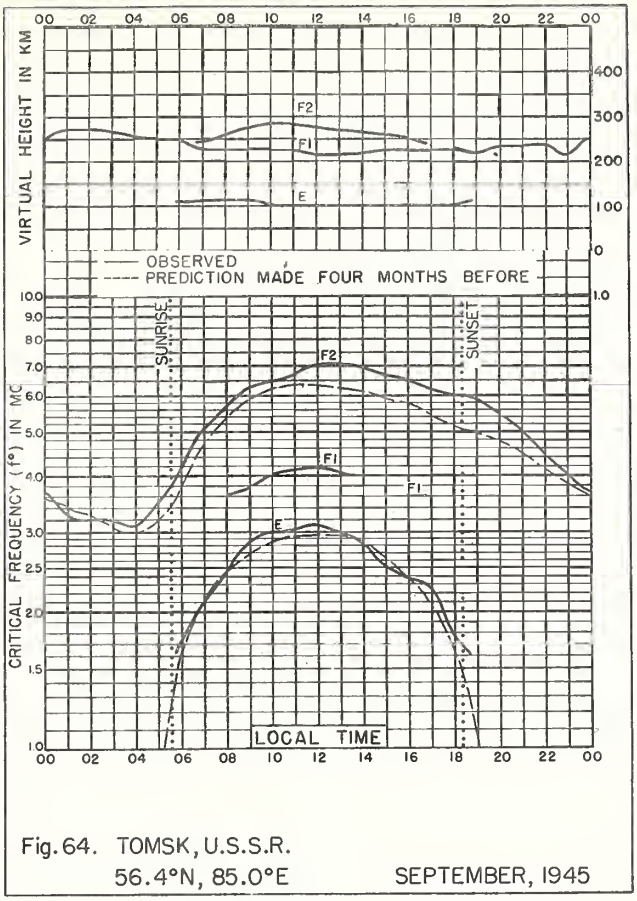


Fig. 64. TOMSK, U.S.S.R.
56.4°N, 85.0°E SEPTEMBER, 1945

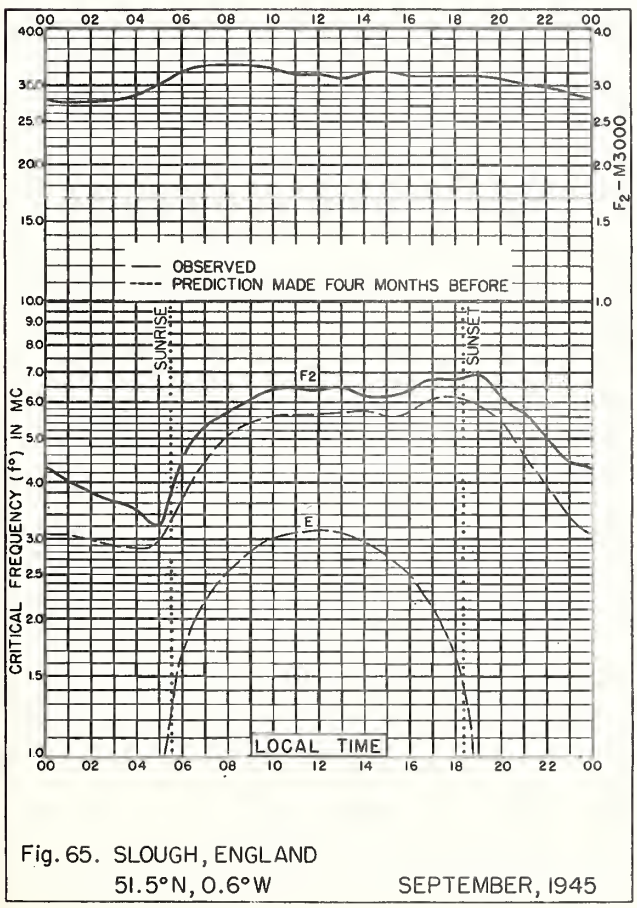


Fig. 65. SLOUGH, ENGLAND
51.5°N, 0.6°W SEPTEMBER, 1945

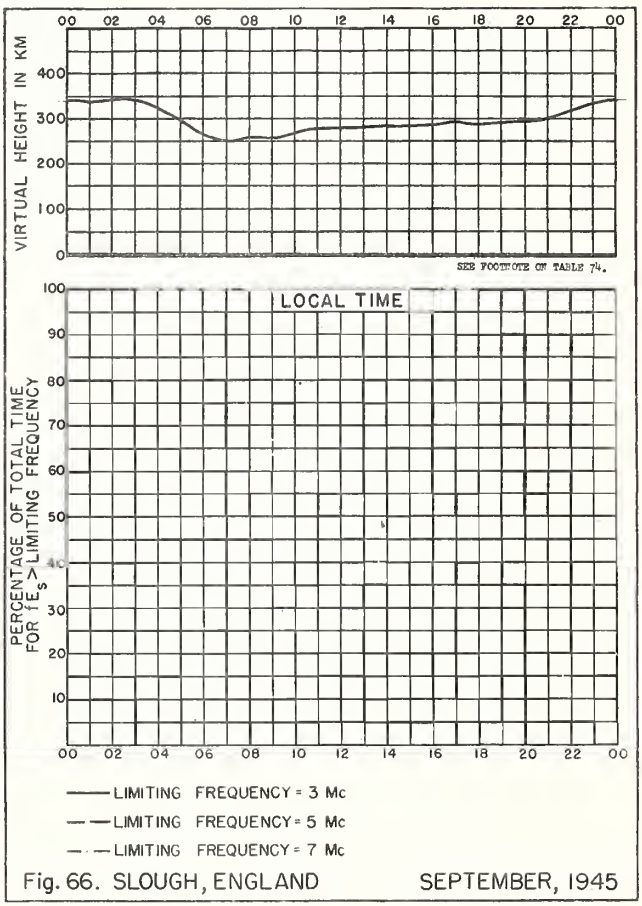


Fig. 66. SLOUGH, ENGLAND SEPTEMBER, 1945

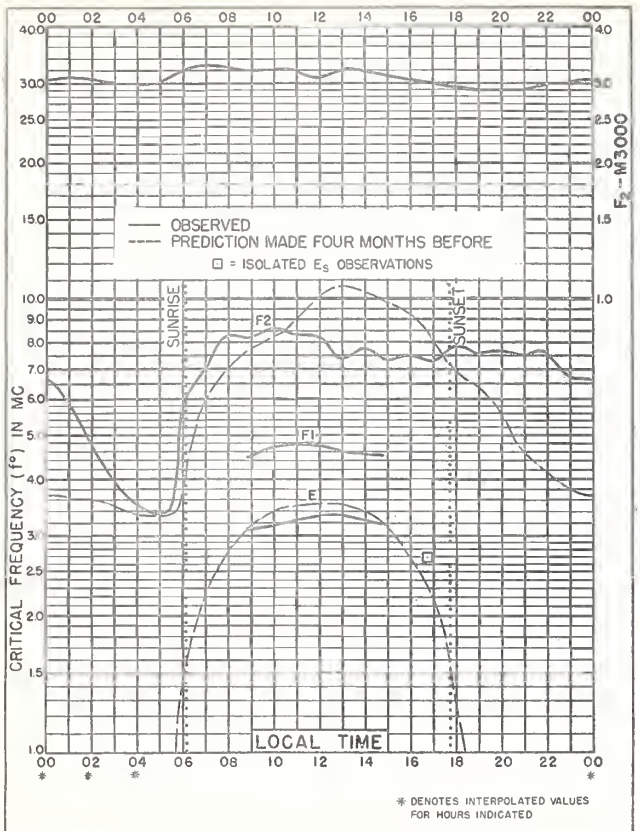


Fig.67. RAROTONGA I.
21.4°S, 159.6°W SEPTEMBER, 1945

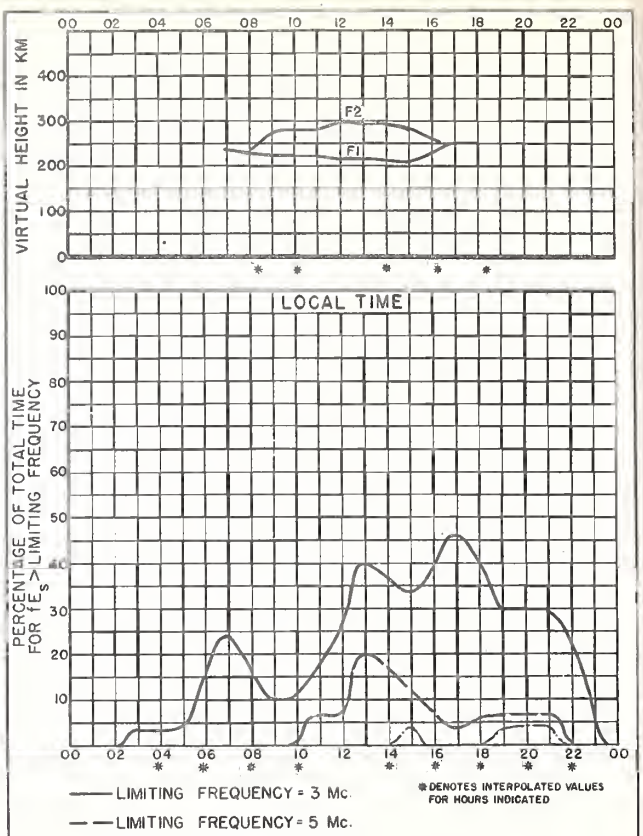


Fig. 68. RAROTONGA I. SEPTEMBER, 1945

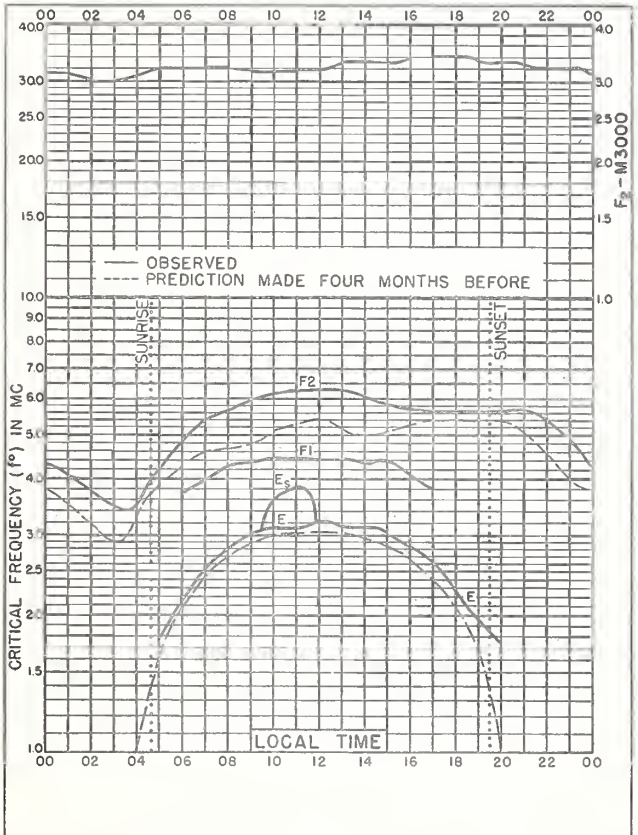


Fig.69. SVERDLOVSK, U.S.S.R.
56.7°N, 61.1°E AUGUST, 1945

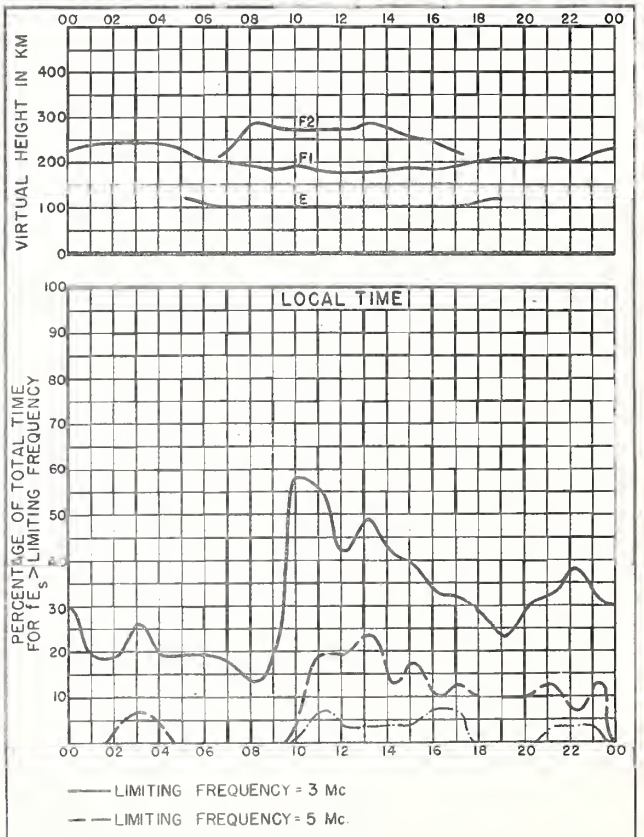


Fig. 70. SVERDLOVSK, U.S.S.R. AUGUST, 1945

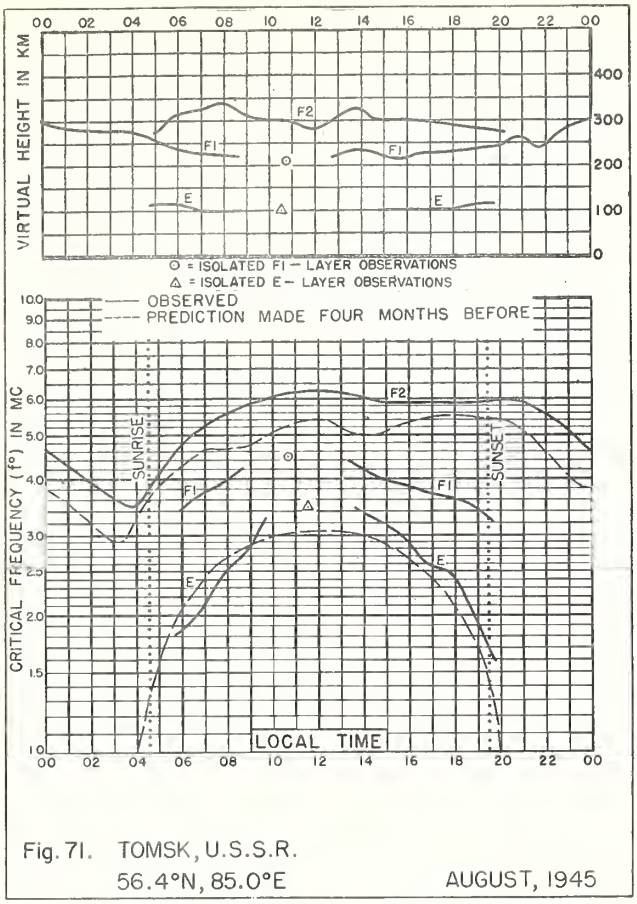


Fig. 71. TOMSK, U.S.S.R.
56.4°N, 85.0°E AUGUST, 1945

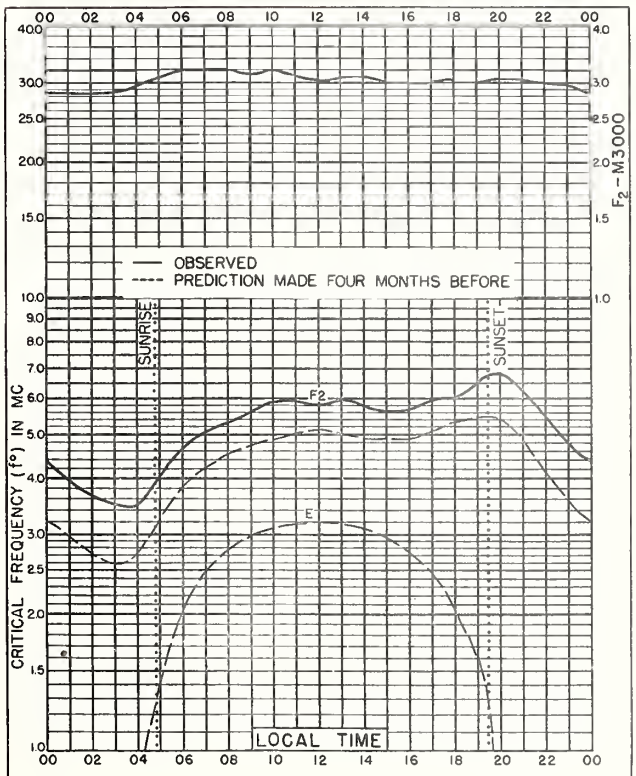


Fig. 72. SLOUGH, ENGLAND
51.5°N, 0.6°W AUGUST, 1945

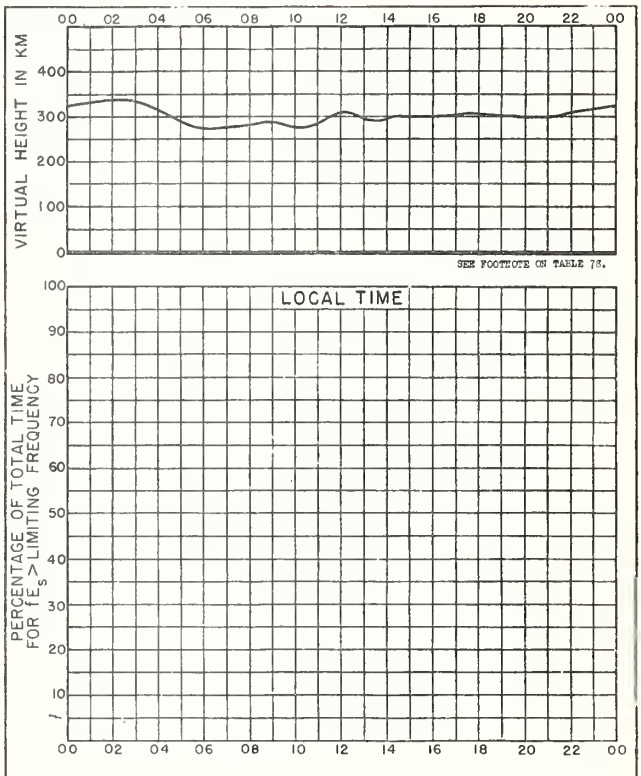


Fig. 73. SLOUGH, ENGLAND AUGUST, 1945

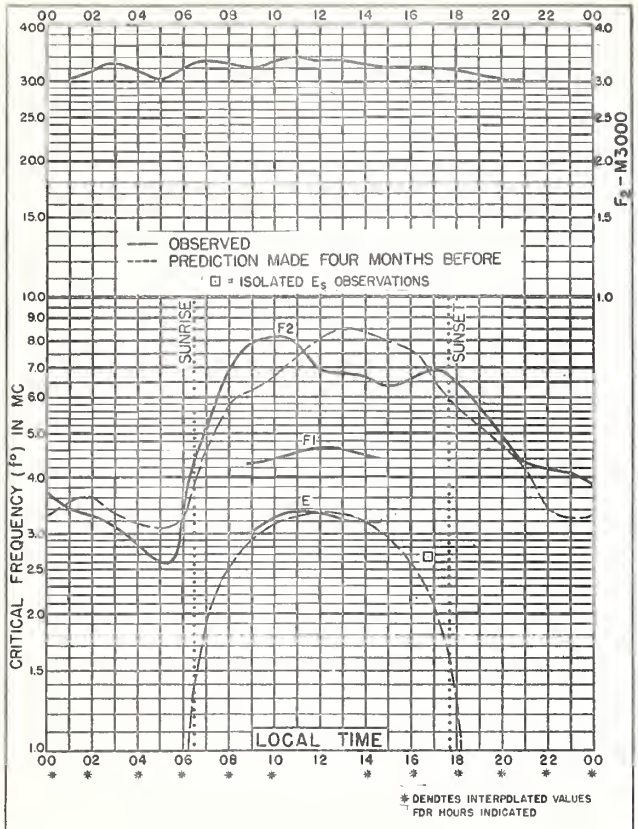


Fig. 74. RAROTONGA I.
21.4°S, 159.6°W AUGUST, 1945

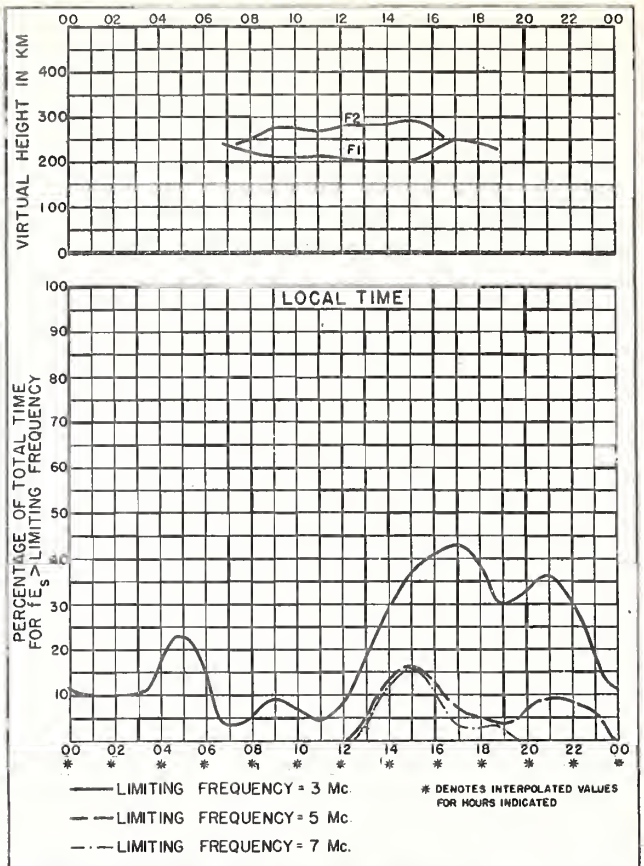


Fig. 75. RAROTONGA I. AUGUST, 1945

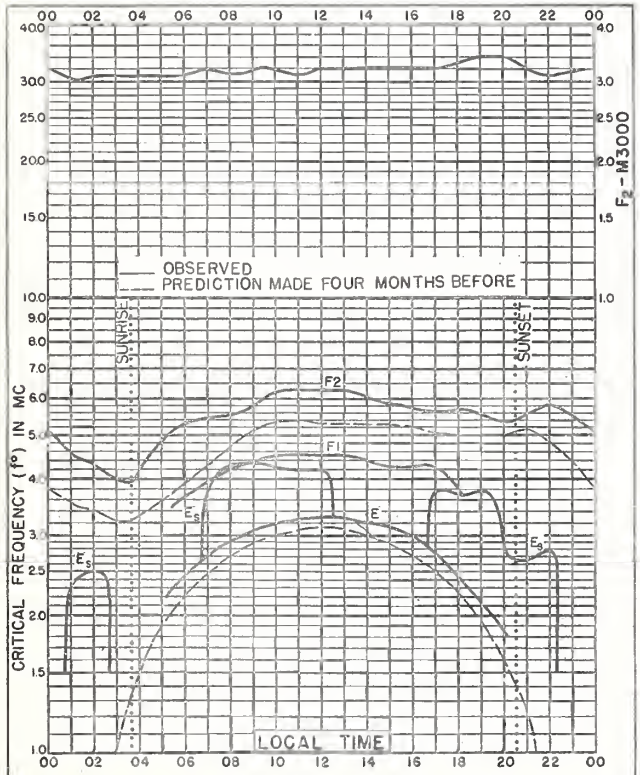


Fig. 76. SVERDLOVSK, U.S.S.R.
56.7°N, 61.1°E JULY, 1945

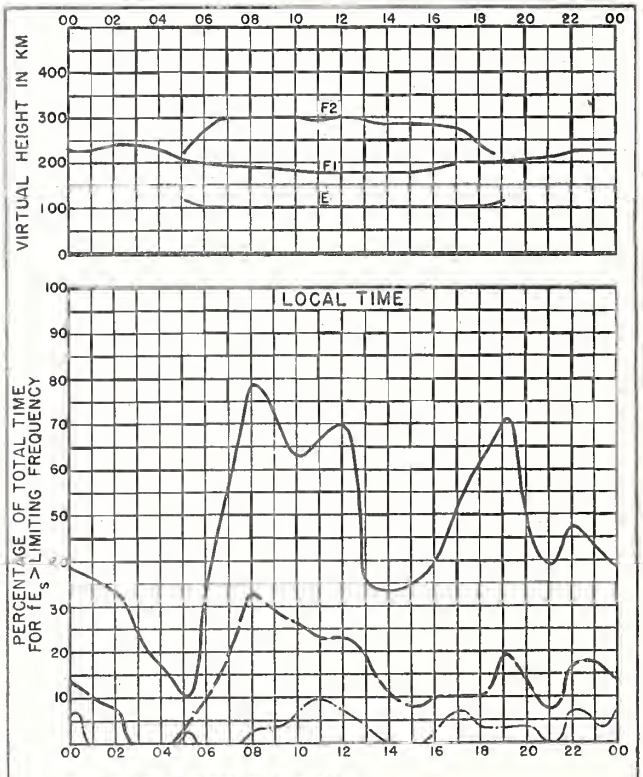


Fig. 77. SVERDLOVSK, U.S.S.R. JULY, 1945

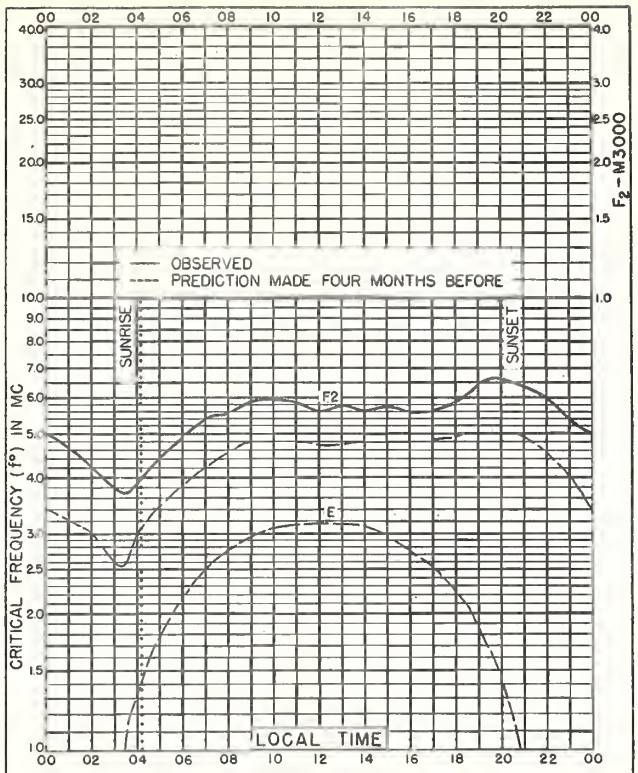


Fig. 78. SLOUGH, ENGLAND
51.5°N, 0.6°W JULY, 1945

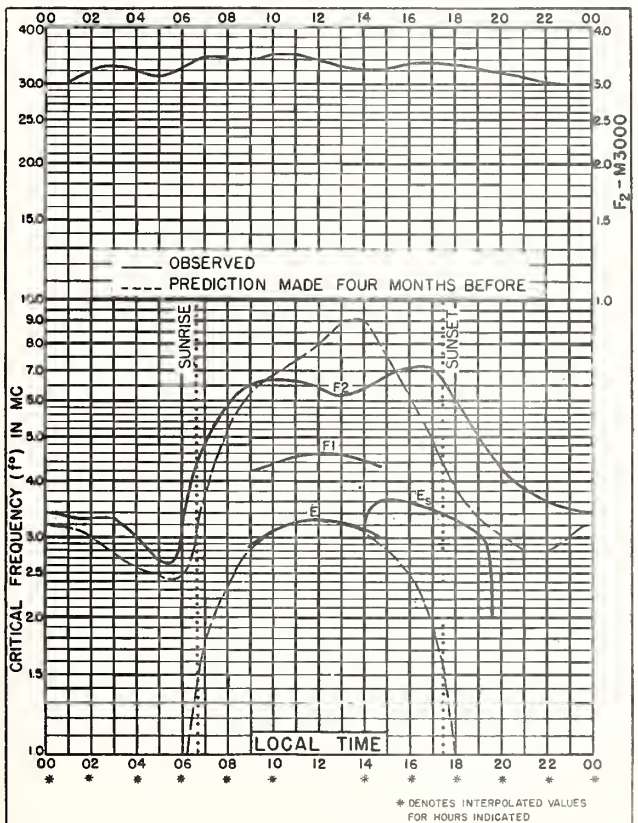


Fig. 79. RAROTONGA I.
21.4°S, 159.6°W JULY, 1945

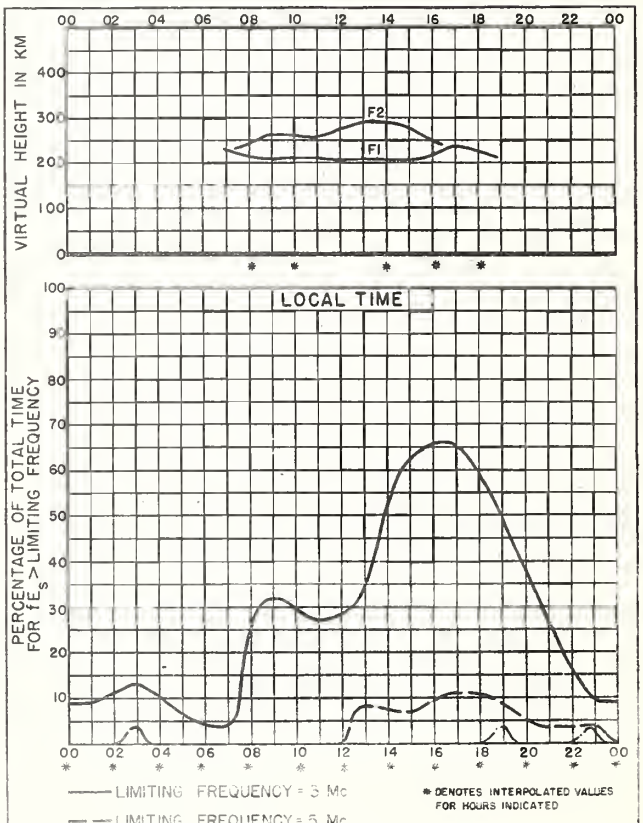


Fig. 80. RAROTONGA I. JULY, 1945

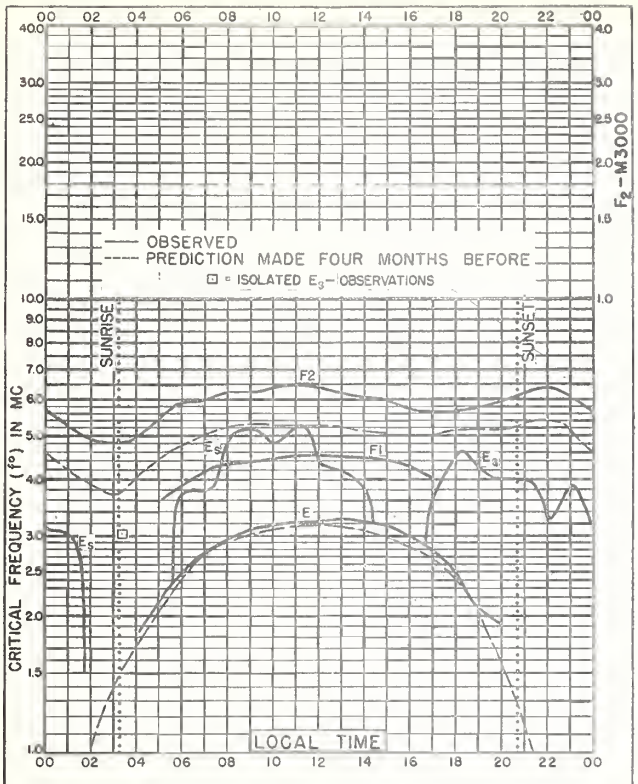


Fig. 81. SVERDLOVSK, U.S.S.R.
56.7°N, 61.1°E JUNE, 1945

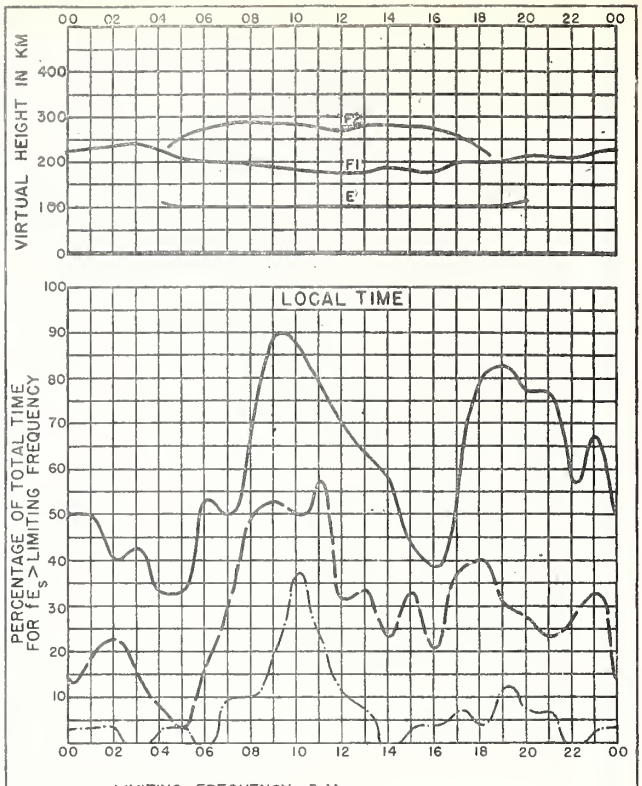


Fig. 82. SVERDLOVSK, U.S.S.R. JUNE, 1945

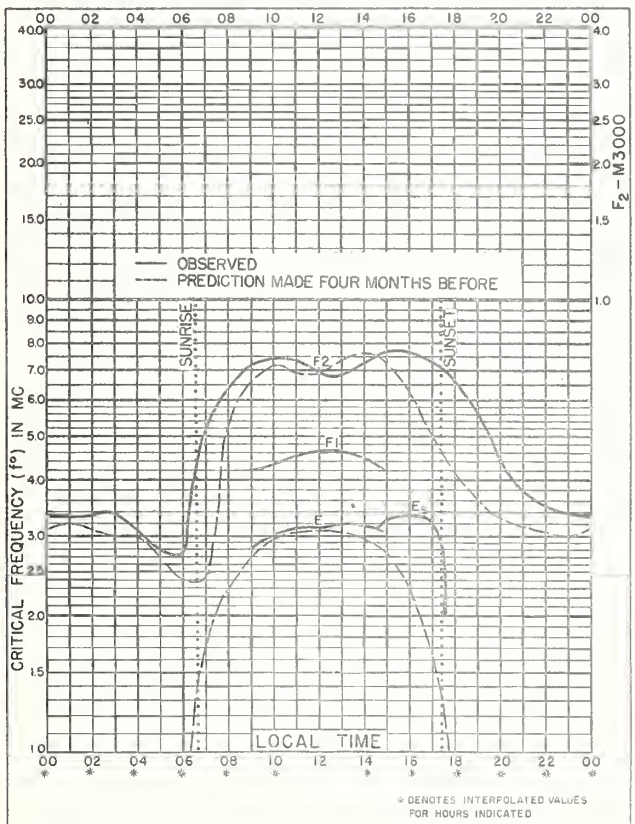


Fig. 83. RAROTONGA I.
21.4°S, 159.6°W JUNE, 1945

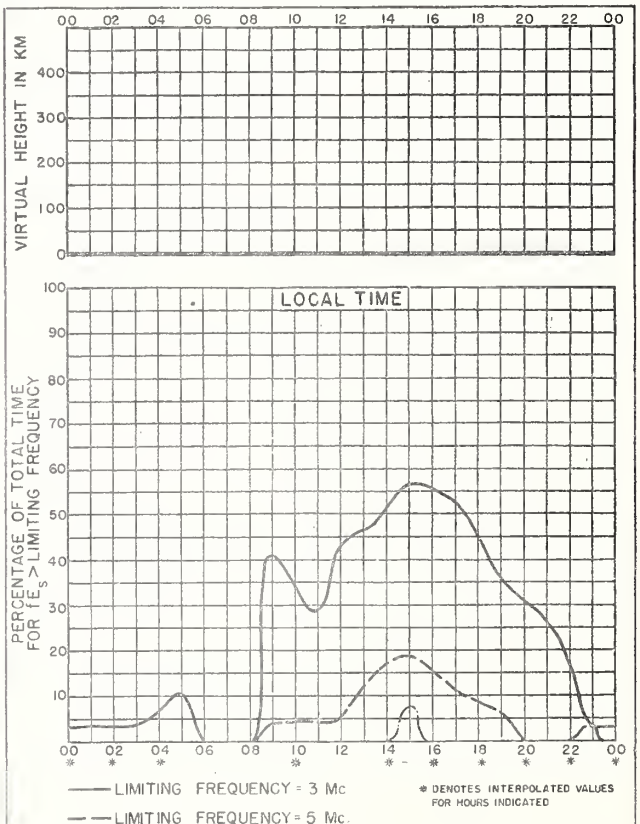


Fig. 84. RAROTONGA I. JUNE, 1945

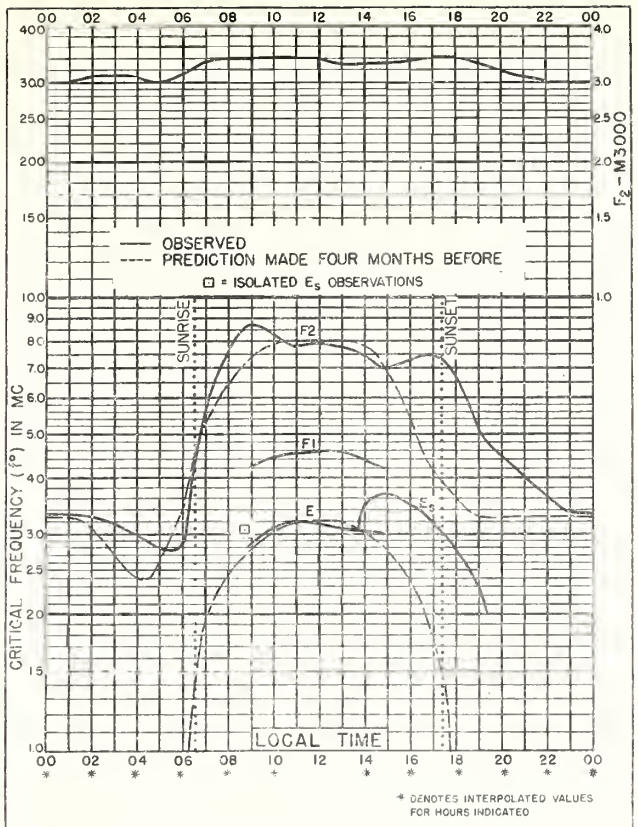


Fig. 85. RAROTONGA I.
21.4°S, 159.6°W MAY, 1945

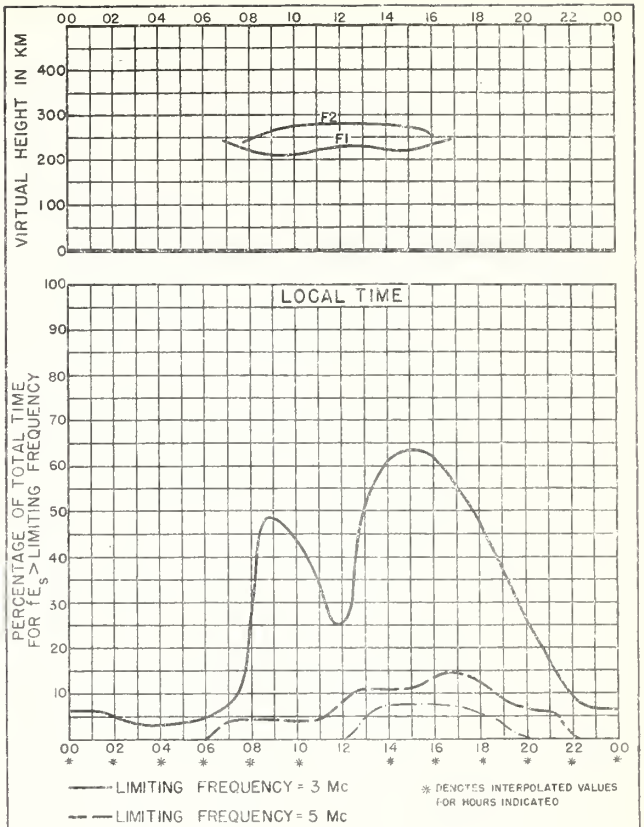


Fig. 86. RAROTONGA I. MAY, 1945

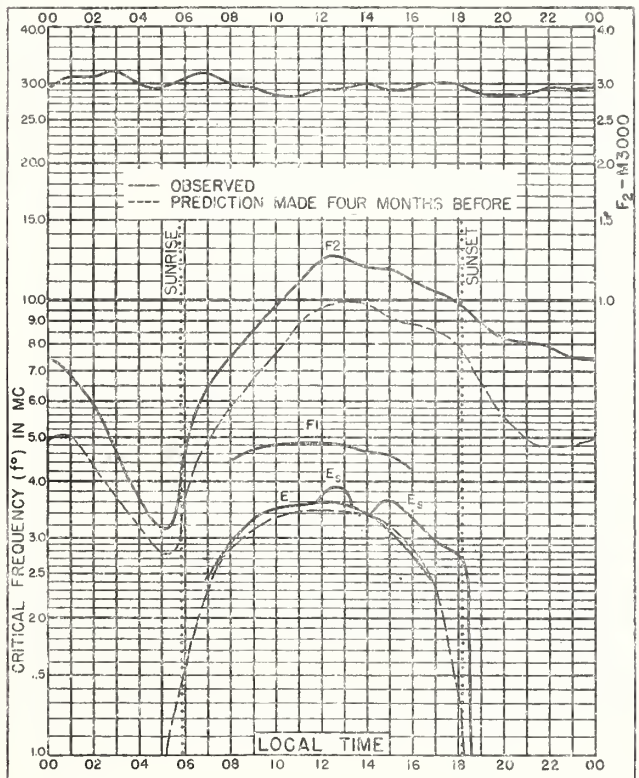


Fig. 87. TRINIDAD, BRIT. WEST INDIES
10.6°N, 61.2°W APRIL, 1945

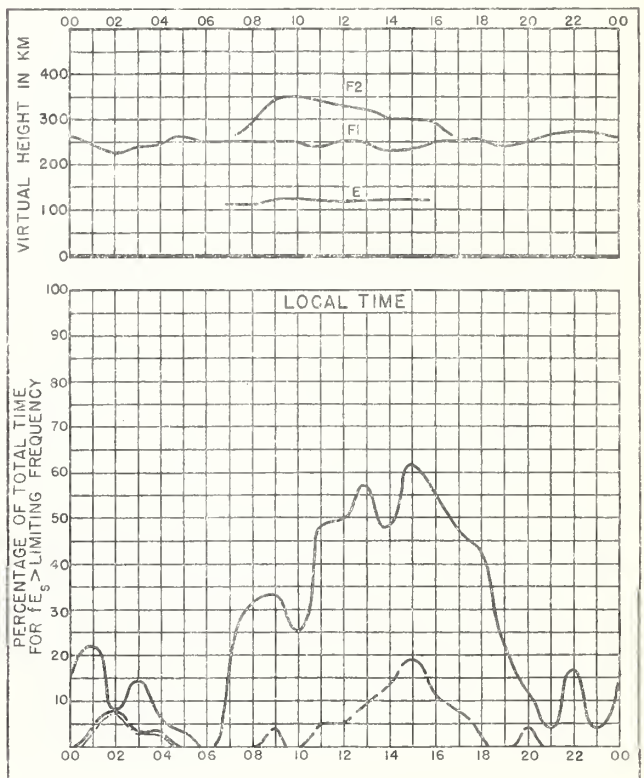


Fig. 88. TRINIDAD, BRIT. WEST INDIES APRIL, 1945

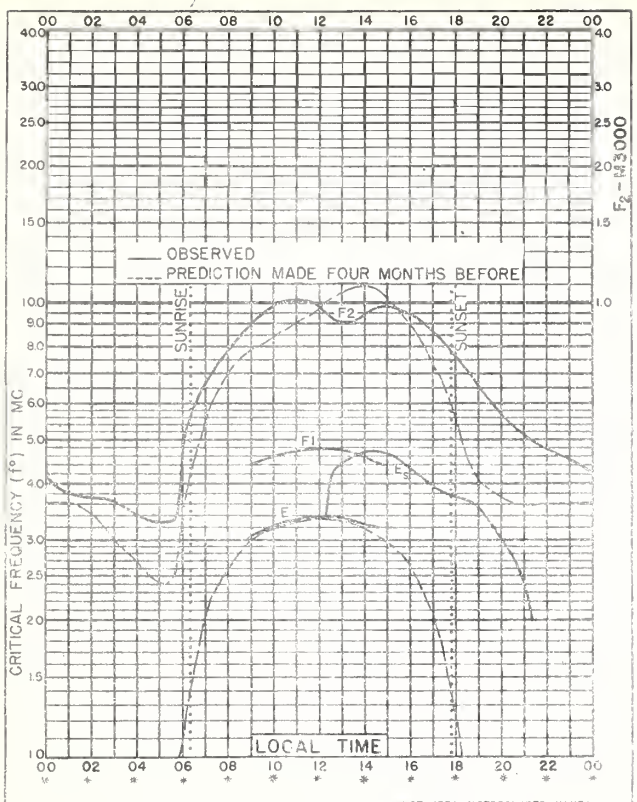


Fig. 89. RAROTONGA I. 21.4°S, 159.6°W APRIL, 1945

SEE FOOTNOTE ON TABLE 87 OF THIS ISSUE.

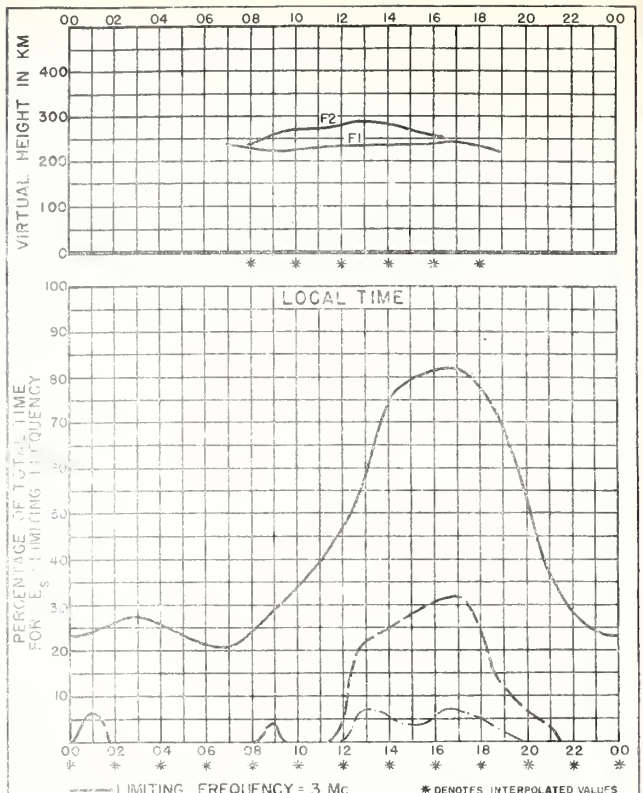


Fig. 90. RAROTONGA I. APRIL, 1945

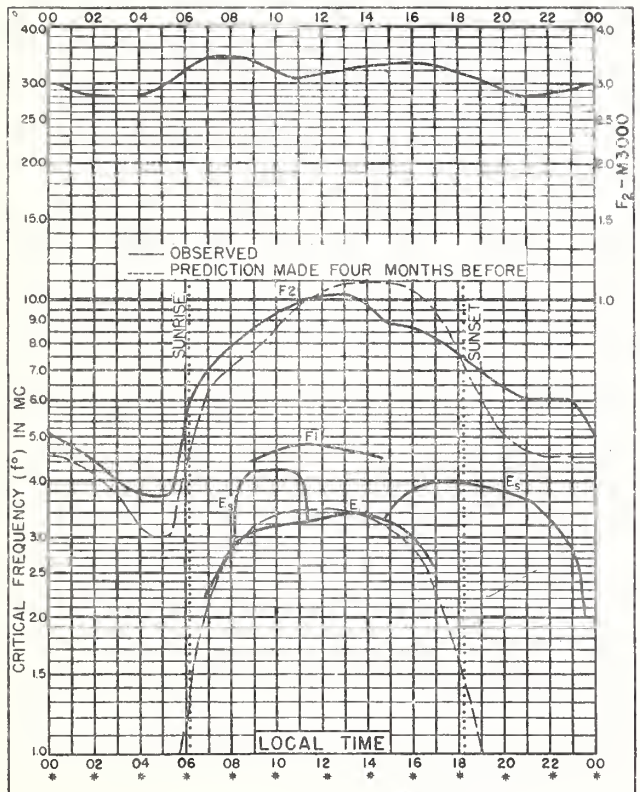


Fig. 91. RAROTONGA I. 21.4°S, 159.6°W MARCH, 1945

SEE FOOTNOTE ON TABLE 88 OF THIS ISSUE.

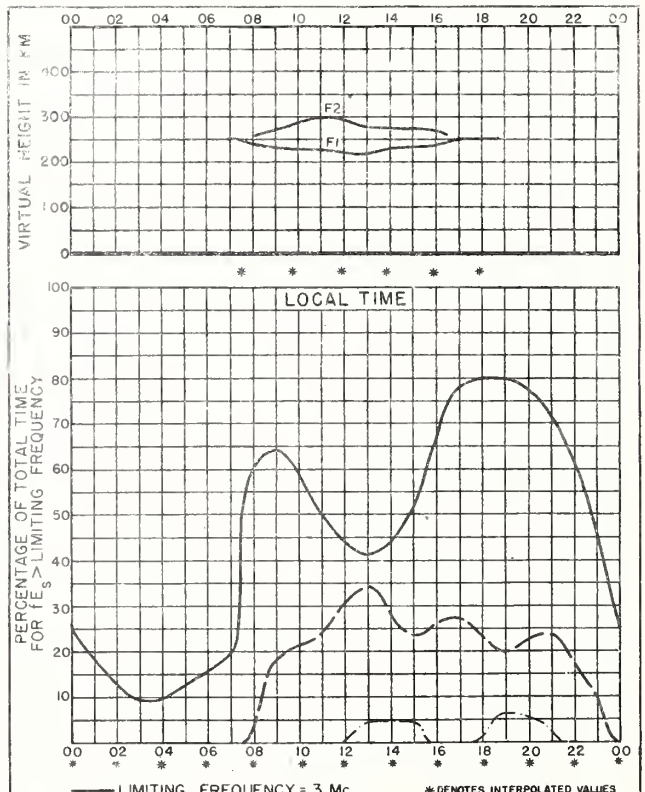


Fig. 92. RAROTONGA I. MARCH, 1945

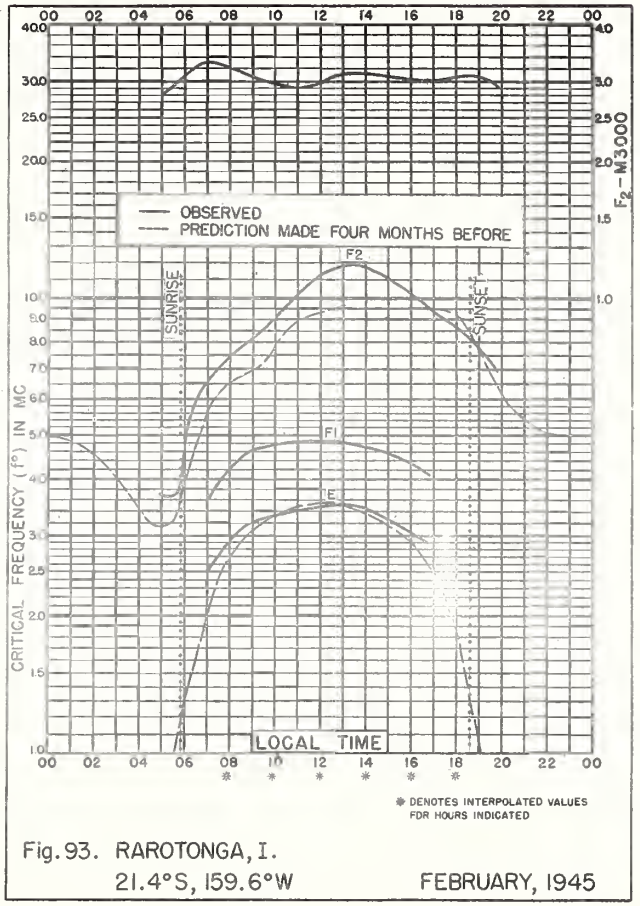


Fig. 93. RAROTONGA, I.
21.4°S, 159.6°W FEBRUARY, 1945

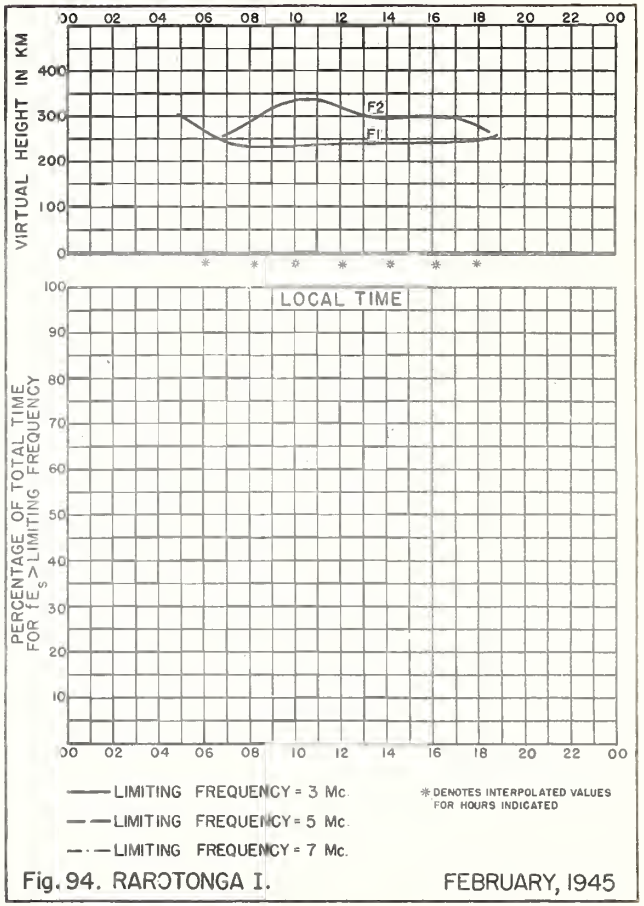


Fig. 94. RAROTONGA I. FEBRUARY, 1945

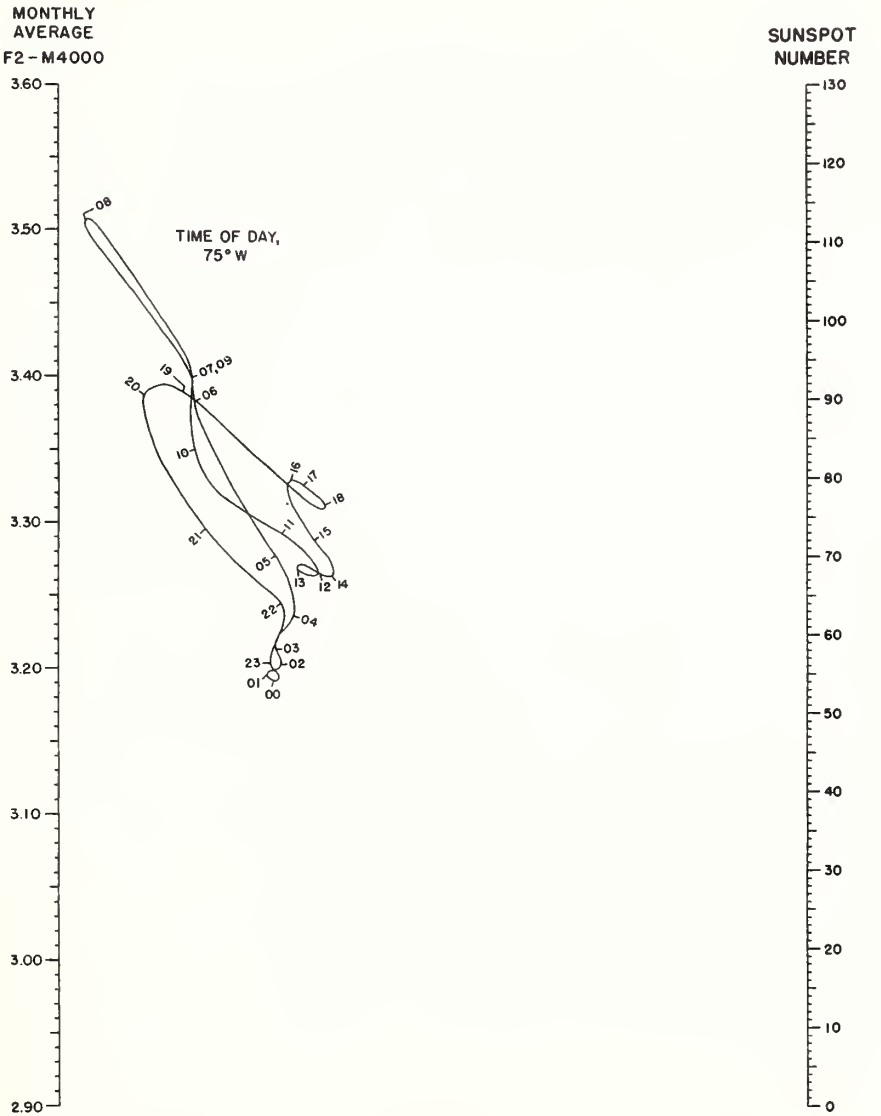


Fig. 95.

NOMOGRAM FOR OBTAINING YEARLY AVERAGE F2-M4000, AT WASHINGTON, D.C.

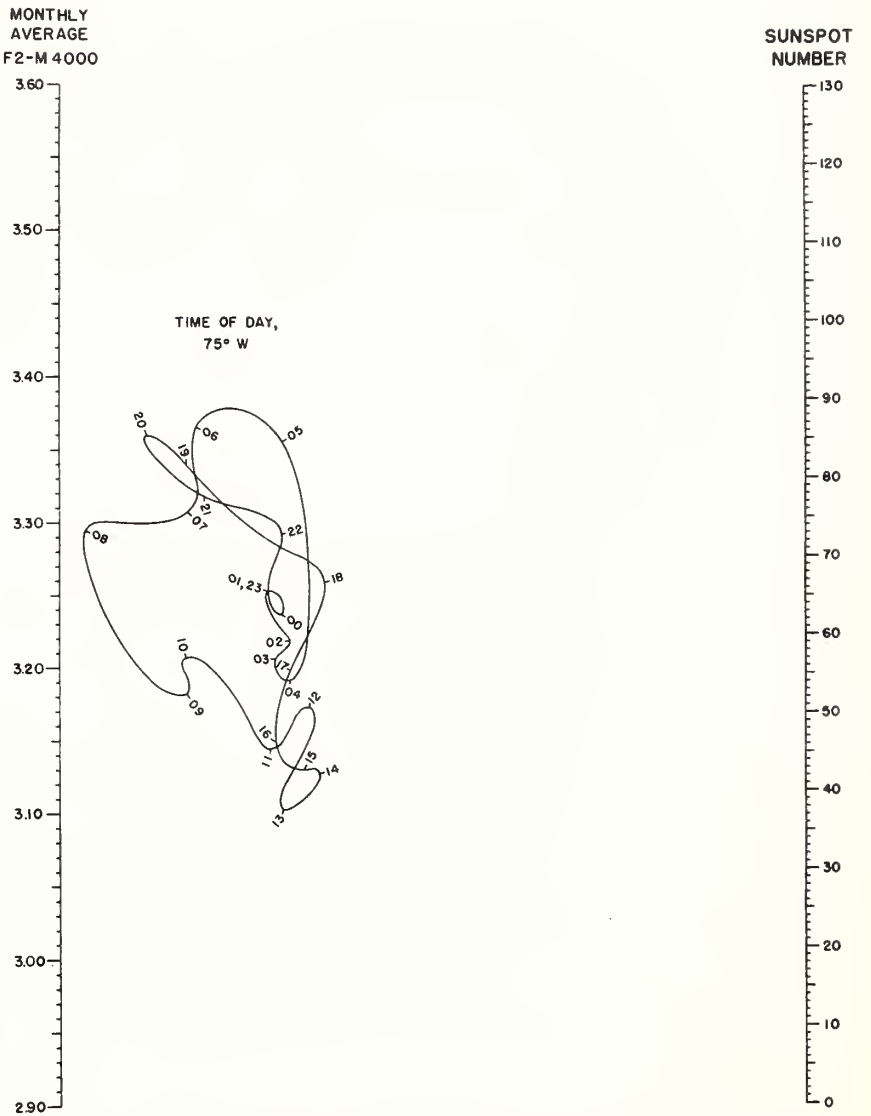


Fig. 96.

NOMOGRAM FOR OBTAINING MONTHLY AVERAGE F2-M4000, JUNE, AT WASHINGTON, D.C.

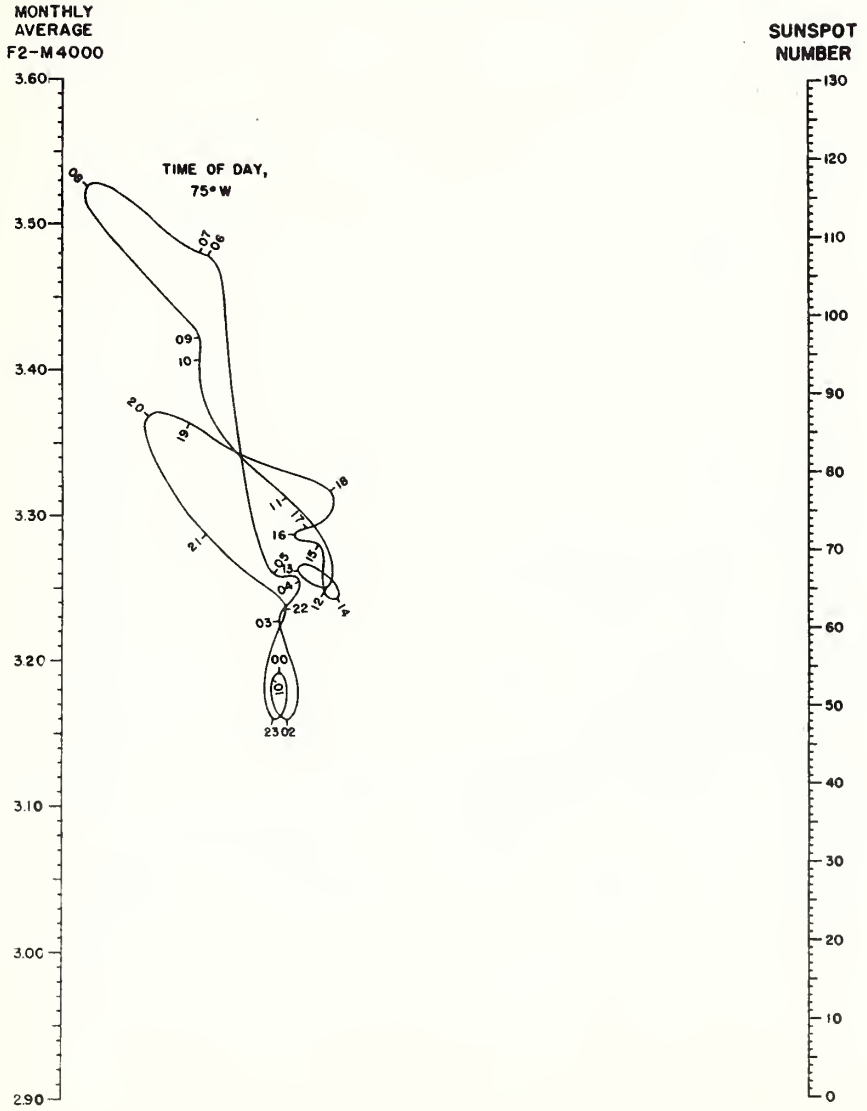


Fig. 97.

NOMOGRAM FOR OBTAINING MONTHLY AVERAGE F2-M4000, SEPTEMBER, AT WASHINGTON, D.C.

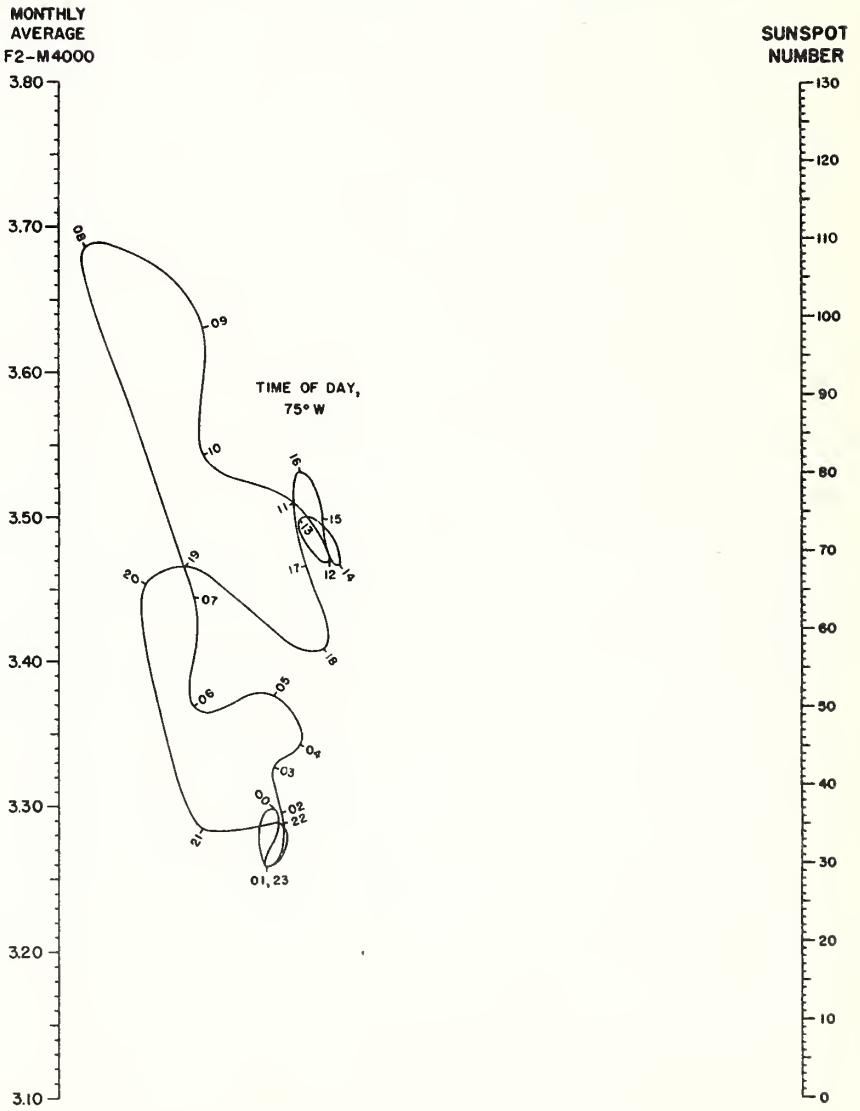


Fig. 98.

NOMOGRAM FOR OBTAINING MONTHLY AVERAGE F2-M4000, DECEMBER, AT WASHINGTON, D. C.

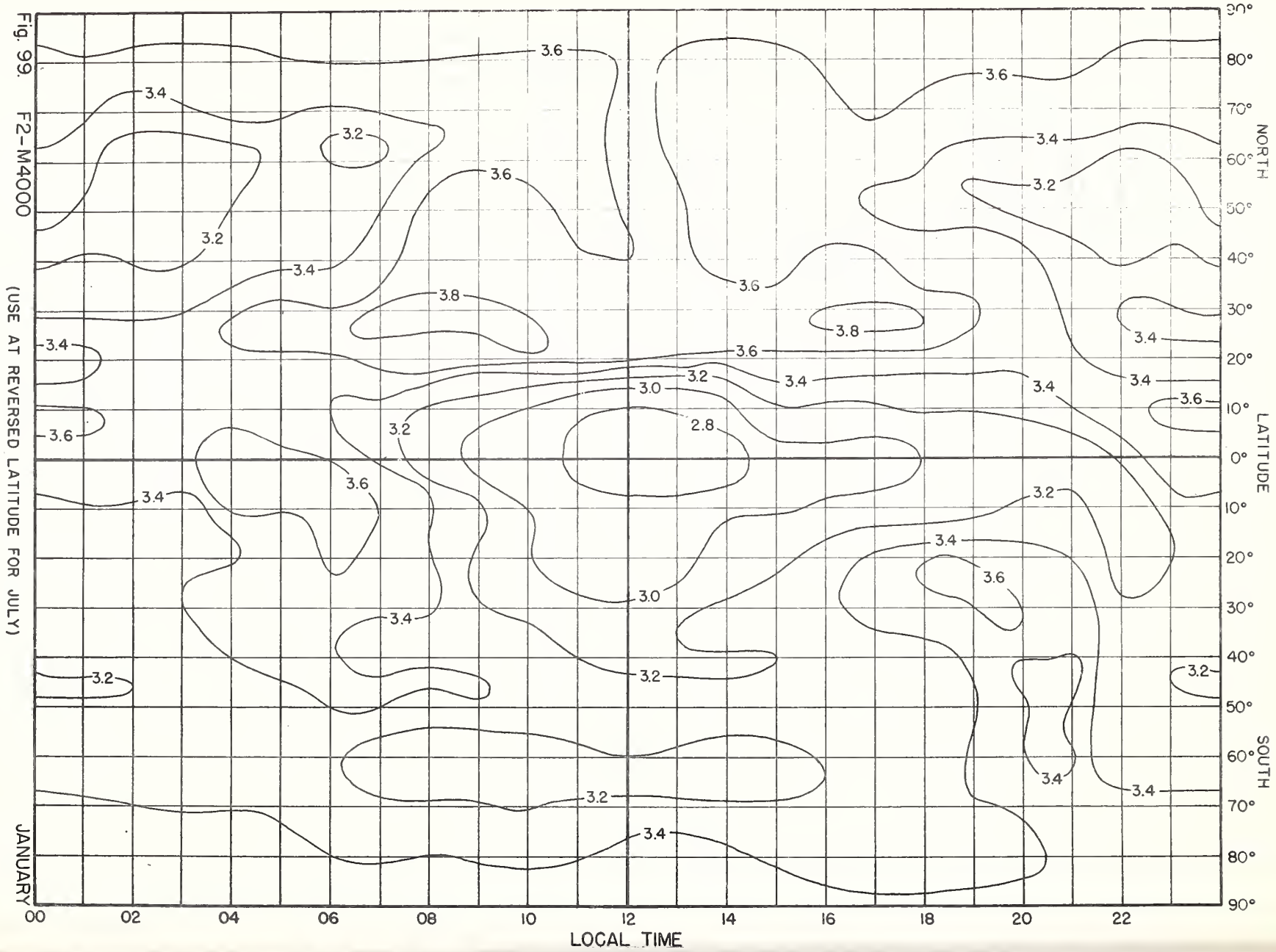


Fig. 99. F2-M4000
(USE AT REVERSED LATITUDE FOR JULY)
JANUARY
LOCAL TIME
00
02
04
06
08
10
12
14
16
18
20
22
NORTH
SOUTH
LATITUDE
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
3.6
3.4
3.2
3.8
3.0
2.8

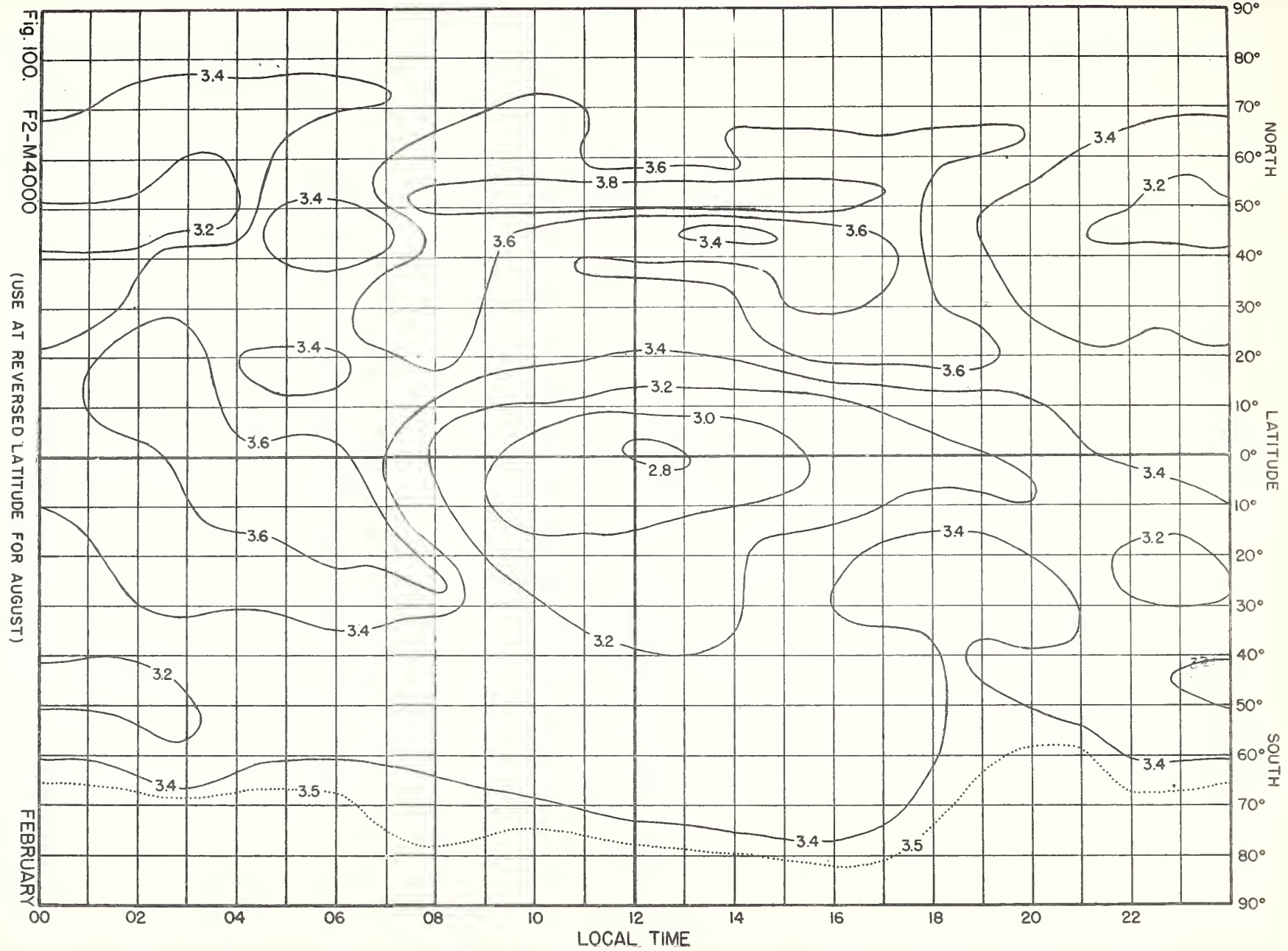


Fig. 100. F2-M4000
(USE AT REVERSED LATITUDE FOR AUGUST)
FEBRUARY
3.4
3.2
3.4
3.6
3.8
3.6
3.4
3.6
3.4
3.2
3.6
3.4
3.4
3.6
3.2
3.0
2.8
3.4
3.6
3.4
3.2
3.2
3.4
3.2
3.4
3.5
3.4
3.5
3.4
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
10°
20°
30°
40°
50°
60°
70°
80°
90°
NORTH
LATITUDE
SOUTH
00
02
04
06
08
10
12
14
16
18
20
22
LOCAL TIME

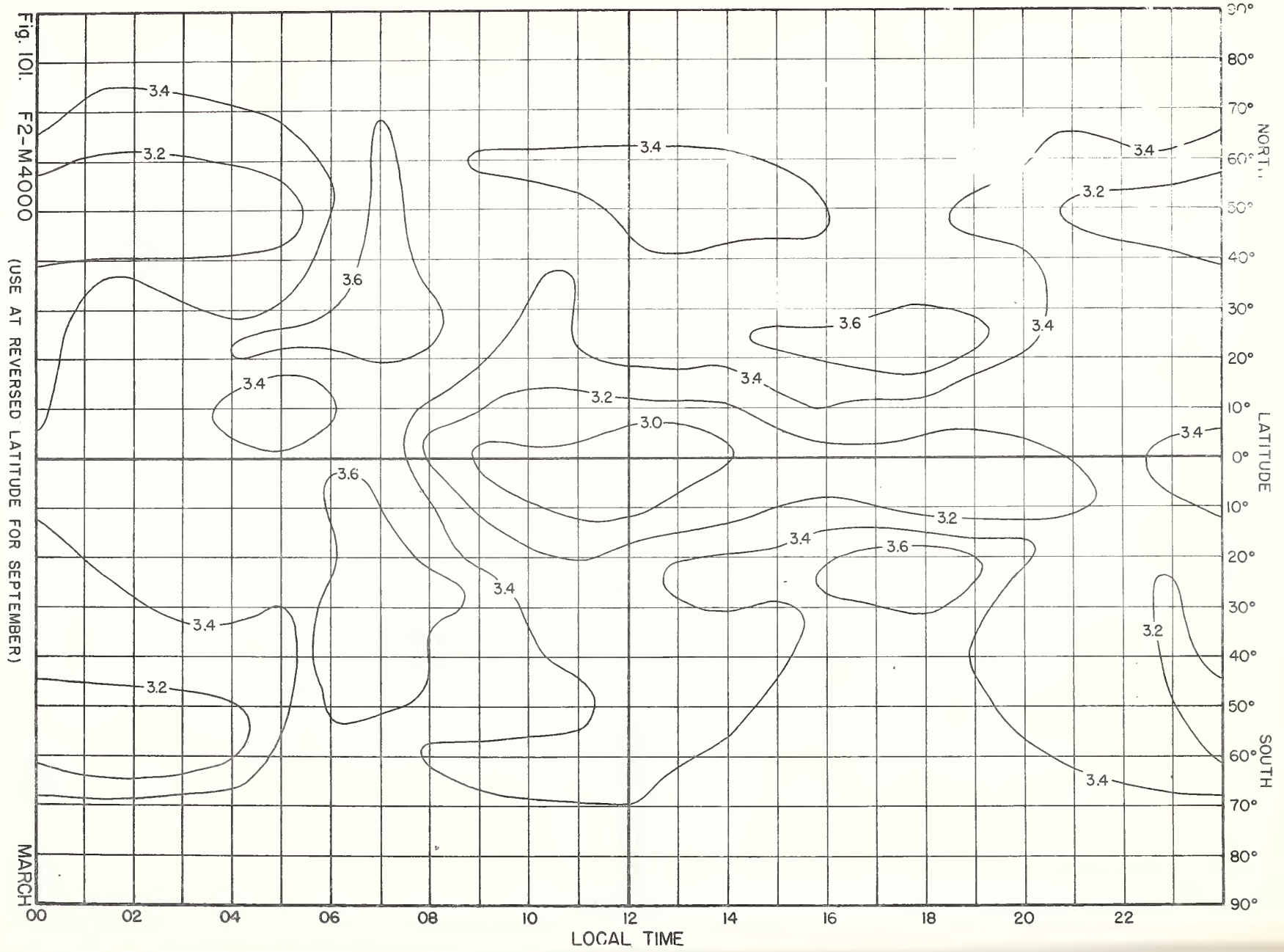


Fig. 101. F2-M4000
(USE AT REVERSED LATITUDE FOR SEPTEMBER)
MARCH
3.4
3.2
3.6
3.4
3.4
3.6
3.4
3.4
3.2
3.0
3.4
3.6
3.2
3.4
3.6
3.4
3.4
3.2
3.2
3.4
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
10°
20°
30°
40°
50°
60°
70°
80°
90°
NORTH
LATITUDE
SOUTH
00
02
04
06
08
10
12
14
16
18
20
22
LOCAL TIME

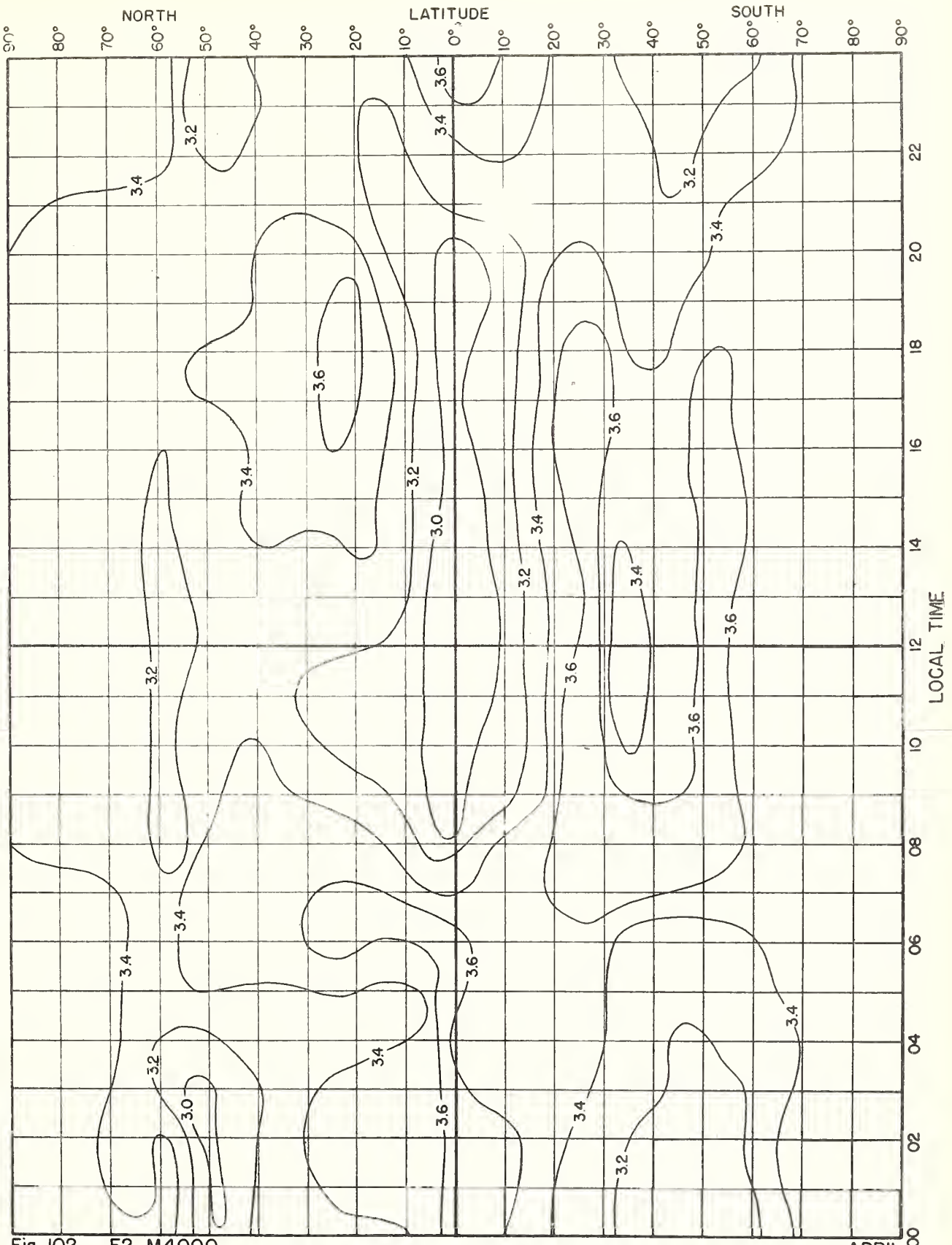


Fig. 102. F2-M4000

(USE AT REVERSED LATITUDE FOR OCTOBER)

APRIL

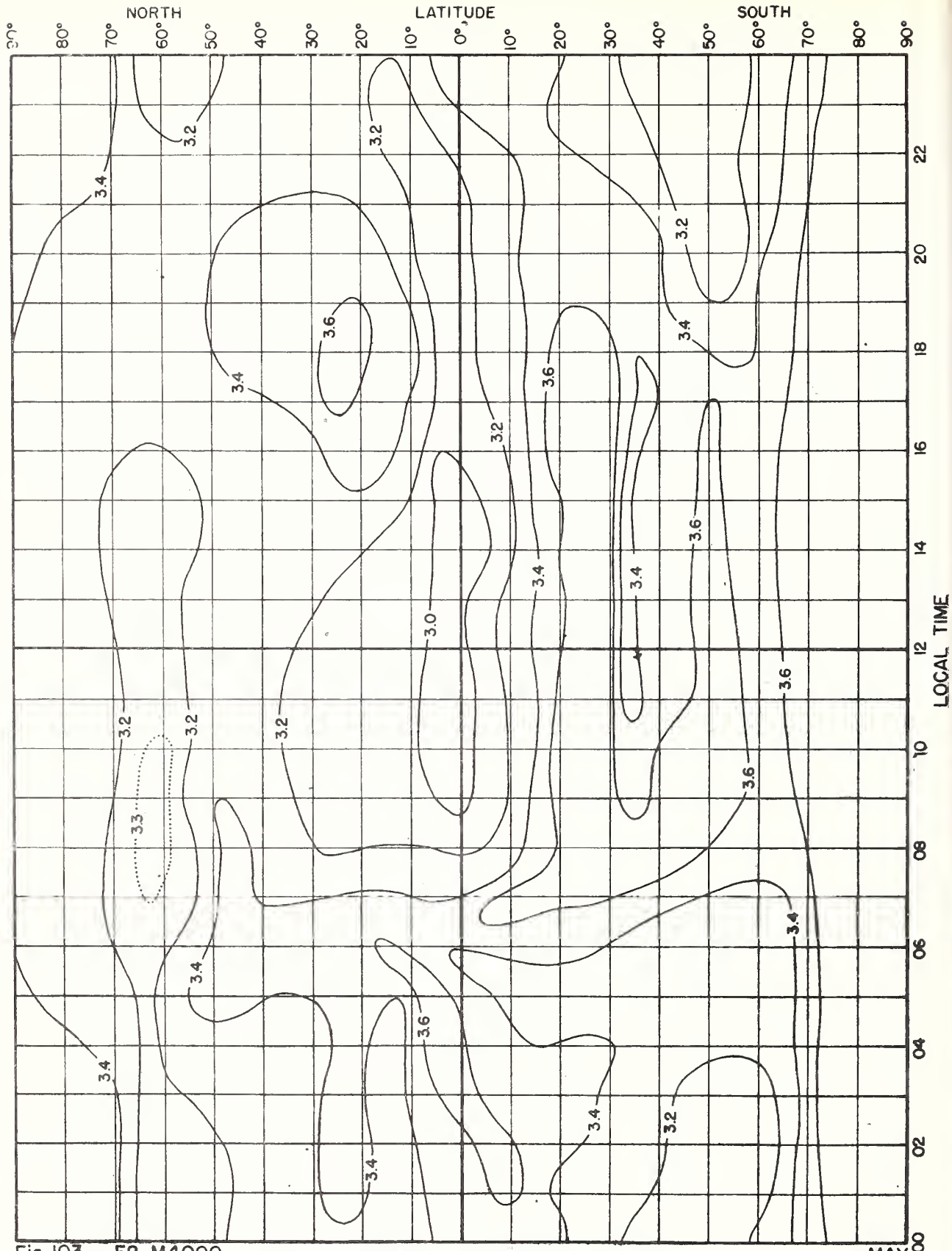


Fig. 103. F2-M4000

(USE AT REVERSED LATITUDE FOR NOVEMBER)

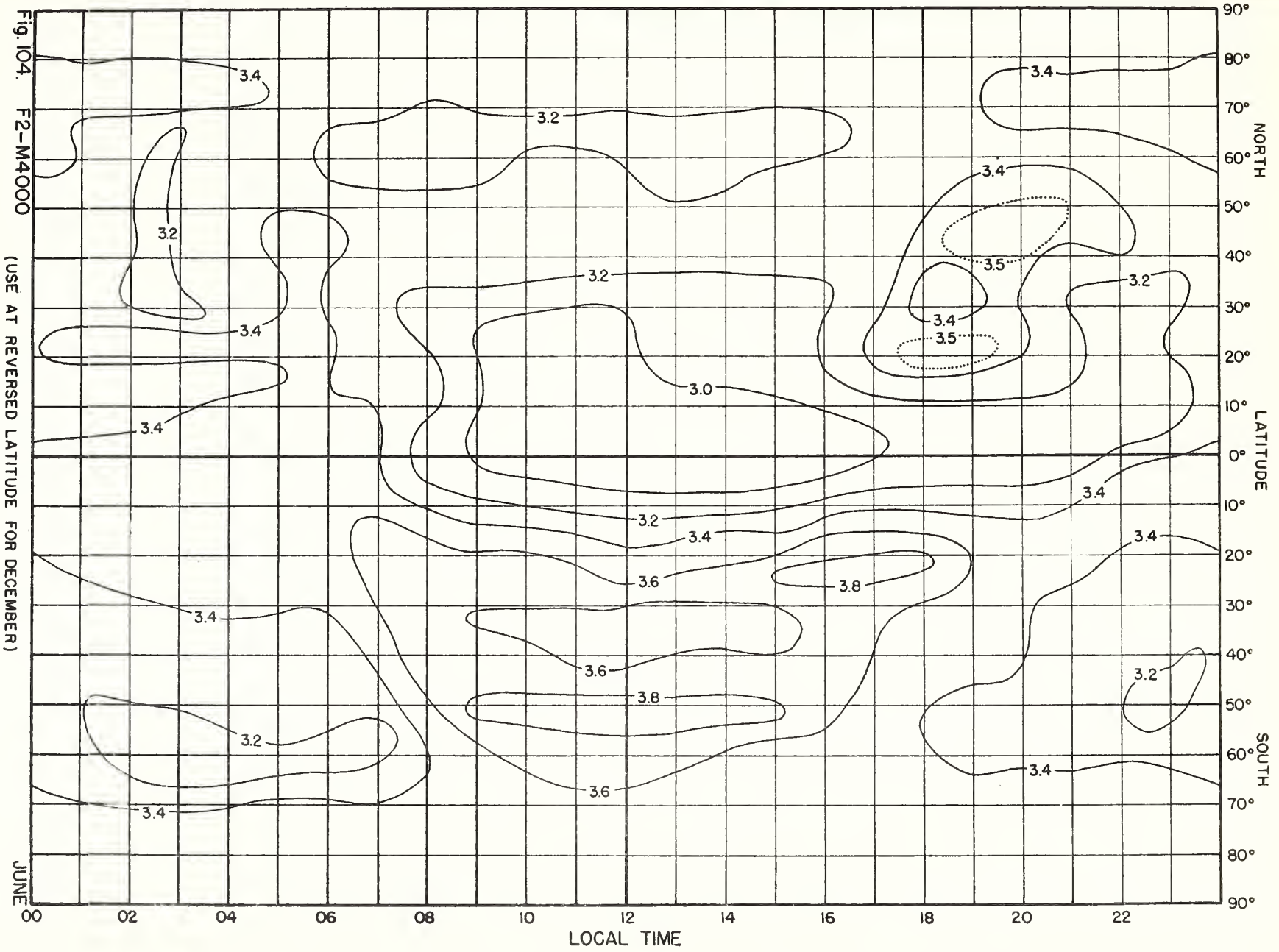


Fig. 104. F2-M4000
(USE AT REVERSED LATITUDE FOR DECEMBER)
JUNE
3.4
3.2
3.4
3.2
3.4
3.5
3.2
3.4
3.5
3.4
3.0
3.4
3.2
3.4
3.6
3.8
3.4
3.4
3.6
3.8
3.2
3.2
3.4
3.6
3.4
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
10°
20°
30°
40°
50°
60°
70°
80°
90°
NORTH
LATITUDE
SOUTH
00
02
04
06
08
10
12
14
16
18
20
22
LOCAL TIME

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- R2 and R3. Obsolete.
- R4. Methods Used by IRPL for the Prediction of Ionosphere Characteristics and Maximum Usable Frequencies.
- R5. Criteria for Ionospheric Storminess.
- R6. Experimental Studies of Ionospheric Propagation As Applied to The Loran System.
- R7. Second Report on Experimental Studies of Ionospheric Propagation As Applied to The Loran System.
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- R13. Ionospheric and Radio Propagation Disturbances, October 1943 Through February 1945.
- R14. A Graphical Method for Calculating Ground Reflection Coefficients.
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- R16. Predicted F2-layer Frequencies Throughout the Solar Cycle, for Summer, Winter, and Equinox Season.
- R17. Japanese Ionospheric Data - 1943.
- R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures - October 1943 through May 1945.
- R19. Nomographic Predictions of F2-layer Frequencies Throughout the Solar Cycle, for June.
- R20. Nomographic Predictions of F2-layer Frequencies Throughout the Solar Cycle, for September.
- R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)
- R22. Nomographic Predictions of F2-layer Frequencies Throughout the Solar Cycle, for December.
- R23. Solar-Cycle Data for Correlation With Radio Propagation Phenomena.
- R24. Relations between Band Width, Pulse Shape and Usefulness of Pulses in The Loran System.
- R25. The Prediction of Solar Activity as a Basis for Predictions of Radio Propagation Phenomena.
- R26. The Ionosphere as a Measure of Solar Activity.
- R27. Relationships Between Radio Propagation Disturbance and Central Meridian Passage of Sunspots Grouped by Distance From Center of Disc.
- R28. Nomographic Predictions of F2-Layer Frequencies Throughout the Solar Cycle for January.
- R29. Revised Classification of Radio Subjects Used in National Bureau of Standards (N.B.S. Letter Circular LC-814 superseding circular C385).
- R30. Disturbance Rating in Values of IRPL Quality - Figure Scale From A. T. & T. Co. Transmission Disturbance Reports to Replace T.D. Figures as Reported.
- R31. North Atlantic Radio Propagation Disturbances, October 1943 through October 1945.
- R32. Nomographic Predictions of F2-Layer Frequencies Throughout the Solar Cycle, for February.
- R33. Ionospheric Data on File at IRPL.

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